Year 11 Science GCSE Revision – PHYSICS (PAPER 1)

Physics only content is the extra work that **separate science** students have studied

All support resources (specimen exam papers, mark schemes, powerpoints, summary sheets, core practicals) can be found on the reference drive at **N:\Reference\Science\NEW AQA GCSE**

Revision should be checked against syllabus content (different for TRIOLOGY and separate PHYSICS) at **N:\Reference\Science\NEW AQA GCSE\syllabus content (physics)**

Make sure you **revise the required practicals** properly. These are more likely to come up on the examination papers

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Week Beginning	**Topic**	**Key Ideas**	**Topics for possible longer answer responses**
11th March	P1 Energy	Energy calculations – elastic potential, kinetic and gravitational potential Work and energy transfers – including dissipation of energy Power Specific heat capacity Global energy supply and demand - Renewable and non-renewable resources Required Practical: Specific heat capacity **Higher tier** **Efficiency**	Describe the energy transfers involved in a swinging pendulum/ roller coaster. How can you reduce the amount of energy dissipated from a house? Describe a method to determine the specific heat capacity of a block of brass. Discuss the advantages and disadvantages of wind power.
Physics only content		Describe how insulation prevents heat transfer by conduction, convection and radiation Required Practical: Effectiveness of different insulating materials	Describe a method to investigate which materials is the most effective insulator.
18th March	P2 Electricity	Circuit symbols Current and voltage in series and parallel circuits The I-V characteristics and properties of a filament lamp, diode, thermistor and resistor Resistance in series and parallel circuits – being able to calculate the total resistance in a series circuit Wiring of a plug – colours and functions of each part The National grid and the role of transformers Calculating power and energy	Describe and explain the shape of an I-V graph of a filament bulb. Label the different wires in the plug and describe their function. Why is electricity transmitted at high voltages in the national grid?

		Required practicals : Resistance of a length of wire; I-V characteristics of a resistor, lamp and diode; Resistors in series and parallel	
Physics only content			
25th March	P3 Particle Model of Matter	Density calculations of regular and irregular shaped objects Changes of state and the particle model of solids liquids and gases Specific heat capacity and latent heat – including heating and cooling curves Particle motion in gases Required practical: calculating the density of regular solids, irregular solids and liquids.	Describe a method to determine the density of an irregularly shaped object. Describe what happened during a change of state from solid to liquid in terms of particle arrangement and motion.
Physics only content		Increasing the pressure of a gas	Explain why increasing the number of particles in a container increases the pressure exerted by a gas.
1st April	P4 Atomic Structure	Structure of the atom and relative mass and charge of protons, neutrons and electrons Properties of alpha, beta and gamma radiation Nuclear decay equations Half life Hazards of radiation - Irradiation and contamination	Describe how you could determine the type of radiation being emitted by a source using paper aluminium and lead. Why is alpha radiation more dangerous in contamination than irradiation?
Physics only content		Background radiation Uses of radiation in smoke detectors, paper thickness, tracers and medical applications Nuclear fission and nuclear reactors Nuclear fusion	How does a smoke detector work? Why would a smoke detector not work with gamma radiation? Explain how nuclear fission can lead to a chain reaction.

Year 11 Science GCSE Revision – PHYSICS (PAPER 2)

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Week Beginning	**Topic**	**Key Ideas**	**Topics for possible longer answer responses**
8th April + 15th April	P5 Forces	Calculations of motion – speed, acceleration, $v^2=u^2+2as$ Motion graphs – distance-time graphs, velocity-time graphs, Mass and weight Newton's Laws of motion – balanced, unbalanced, force pairs Calculating resultant forces Factors that affect stopping distance Force and energy in springs Required Practicals : Force and acceleration (ticker tape timer); force and extension of a spring **Higher tier** **Tangents to distance time-graphs** **Motion in a circle** **Free body diagrams and resolving forces** **Momentum**	Describe how you could determine the speed of an object using a distance-time graph. Describe which factors affect the thinking distance when stopping a car. Why do we say a car is constantly accelerating when it is travelling around a roundabout?
Physics only content		Moments – levers and gears Pressure in fluids and atmospheric pressure	Why is atmospheric pressure lower at the top of a mountain compared to sea level?
22nd April	P6 Waves	Characteristics of transverse and longitudinal waves Measuring and calculating wave speed in a ripple tank and in solids Reflection and refraction The electromagnetic spectrum properties and uses Required Practicals: Calculating wave speed in liquids (water in ripple tank), gases (echo in air)	Describe a method to measure the speed of a water wave in a ripple tank. Describe how microwaves heat up food.

		and solids (vibrations on a string); How much infrared radiation is emitted/absorbed by different colour and texture surfaces **Higher tier** **Explain refraction using wave fronts** **Reflection and refraction of radiowaves**	Explain how radiowaves are used in communication between two antennae on opposite sides of the planet.
Physics only content		Sound waves and ultrasound Seismic waves Colour, lenses, magnification Black body radiation Global warming Required Practicals: Reflection of light; Refraction of light	Explain how we discovered the structure of the Earth using seismic waves.
29th April	P7 Electromagnetism	Magnetic fields and compasses The magnetic effect of a wire and a solenoid The earth's magnetic field **Higher tier** **Flemings left-hand rule** **Force on a conductor and magnetic flux density** **Electric motors**	Explain why we say compasses are 'north seeking'. What factors can increase the strength of an electromagnet? Describe how a dc electric motor works.
Physics only content		Electromagnets Loudspeakers and microphones The generator effect Transformers and the transformer equation	Describe how a loudspeaker works. Describe how a microphone works. Explain why we use step-up and step-down transformers in the national grid.
6th May	P8 Space (Physics only)	The solar system and orbits The life cycle of the sun and other stars Formation of elements Red-shift	Explain why Pluto is very difficult to see from Earth. Describe the relationship between the distance of a planet from the sun and the time it takes to orbit. Why do fusion reactions require high temperatures? Describe the life cycle of a star similar to our Sun.
13th May	Physics Equations	Memorise the following equations (they will not be given in the exam)	$W = m\,g$ $W = F\,s$ $F = k\,e$ $M = F\,d$ $p = F/A$ $s = v\,t$ $a = \Delta v/t$

			$F = m\,a$ $p = m\,v$ $E_k = ½\,m\,v^2$ $E_p = m\,g\,h$ $P = E/t$ $P = W/t$ efficiency = useful output energy transfer/ total input energy transfer efficiency = useful power output/ total power input $v = f\,\lambda$ $Q = I\,t$ $V = I\,R$ $P = V\,I$ $P = I^2\,R$ $E = P\,t$ $E = Q\,V$ $\rho = m/V$
7th May	Exam practise	Use specimen papers and summary sheets on the reference drive to develop exam technique. Use your revision guides and class notes to recap the required practicals for each topic. A list is given on the reference drive.	