

ADDITIONAL SCIENCE P2: PHYSICS

Higher content in bold

Video

Exam Q



Resultant Forces			
Define resultant force & describe its effect on moving & stationary objects.			
Predict the motion of an object based on the forces acting on it.			
Forces and Motion			
Use the formula: $f = m \times a$			
Construct and interpret distance-time graphs.			
Calculate the speed of an object from the distance-time graph.			
Define velocity.			
Use the formula: $a = v - u / t$			
Interpret velocity-time graphs.			
Calculate acceleration and distance travelled from a velocity-time graph.			
Forces and Braking			
Label forces acting on a moving object.			
Describe the relationship between braking force, distance and speed.			
Explain the energy transfers that occur on braking.			
Define stopping distance, thinking distance and braking distance.			
Explain the factors affecting thinking and braking distance.			
Forces and Terminal Velocity			
Calculate the weight of an object, using: $W = m \times g$.			
Explain how air resistance changes as the speed of a falling object changes.			
Explain how an object falling through a fluid reaches terminal velocity.			
Draw & interpret velocity-time graphs for objects reaching terminal velocity.			
Forces and Elasticity			
Describe how forces acting on an object may change its shape.			
Explain how this could store elastic potential energy.			
Describe how the force on an elastic object relates to extension, using: $F = k \times e$.			
Forces and Energy			
Define work done.			
Use the equation: $W = F \times d$			
Explain how energy can be transferred when work is done.			
Use the equation: $P = E / t$			
Describe gravitational potential energy using: $E_p = m \times g \times h$			
Calculate kinetic energy using: $E_k = \frac{1}{2} \times m \times v^2$			
Momentum			
Describe momentum, using: $p = m \times v$.			
Describe how momentum is conserved after an event.			
Calculate momentum before and after an event.			
Static Charges			
Explain how static charges can be built up on insulating materials.			
Describe forces acting on similarly or oppositely charged objects brought close together.			
Describe how charges may easily flow through some substances but not others.			

Electrical Circuits			
Describe what current is, and calculate using: $I = Q/t$			
Describe potential difference, and calculate using: $V = W/Q$			
Draw and interpret circuit diagrams, using correct symbols.			
Explain the applications of thermistors and LDRs in circuits in terms of how their resistance			
Interpret current-potential difference graphs for resistors at a constant temperature, filament bulbs			
Describe the relationship between resistance and potential difference & current, and how it may			
Use the equation: $V = I \times R$			
Describe current, resistance and potential difference in series and parallel circuits.			
Describe the properties and used of LEDs.			
Household Electricity			
Describe alternating and direct current and give examples of both.			
State the frequency of the alternating current in mains electricity, and its potential difference.			
Describe the structure and wiring of a 3-pin plug.			
Describe how fuses and RCCBs protect electrical equipment.			
Describe how an earth wire protects equipment with a metal casing.			
Current, Charge and Power			
Describe the energy transfers when current flows through a resistor.			
Compare the efficiency of filament bulbs and CFLs.			
Describe the power of an appliance, using the equation: $P = E/t$			
Describe the power of an appliance, using the equation: $P = I \times V$			
Explain the energy transferred in a circuit, using the equation: $E = V \times Q$			
Atomic Structure			
Describe the structure of an atom, and experiments that have given us evidence for this.			
State the relative masses and charges of protons, neutrons and electrons.			
State how an ion may be formed.			
Define mass number, atomic number and isotope.			
Atoms and Radiation			
Describe how some atoms decay randomly.			
Explain half life of a radioactive substance.			
Describe the origins of background radiation.			
Describe alpha, beta and gamma radiation and write nuclear equations to show alpha and beta			
Compare and explain the differences in ionising power, penetrating power and range in air of the			
Describe how electrical and magnetic fields affect each type of radiation.			
Describe the uses and dangers of each type of radiation.			
Nuclear Fission			
State that uranium-235 and plutonium-239 are fissionable substances in common use.			
Define and describe the stages in nuclear fission.			
Explain how this may start a chain reaction.			
Nuclear Fusion			
Define and describe nuclear fusion			
State that this is the way energy is released in stars.			
Describe how stars are formed from clouds of dust and gas in space.			
Describe the forces acting on a main stage star.			
Describe the life cycle of both stars the size of our Sun and those much bigger.			
Describe how fusion in stars provides all elements in the universe.			