**Year 11 Triple**

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| **P1 Energy** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1.Energy stores and systemsForms of energy, energy changes |   |   |   |   |
| 2. Potential energyEquation for PE , calculations |   |   |   |   |
| 3. Kinetic energyEquation for KE, calculations |   |   |   |   |
| 4. SHCEquation \*Required practical\*, aluminium blocks and heaters |   |   |   |   |
| 5. Conservation and powerEquation |   |   |   |   |
| 6. Reducing energy transfer\*Required Practical\* - beakers |   |   |   |   |
| 7. EfficiencyEquation, calculations, demo practical , kettle |  |  |  |  |
| 8. Non renewableResearch |  |  |  |  |
| 9. RenewableResearch |   |   |   |   |

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| **P2 Electricity** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Current and circuit symbolsDraw and interpret circuit diagrams, identify symbols |   |   |   |   |
| 2. Resistance and Ohms LawEquation, calculations |   |   |   |   |
| 3. Resistance of a wire\*Required practical\*, length of wire |   |   |   |   |
| 4. I-V CharacteristicsDiodes, lamps and resistors, |   |   |   |   |
| 5. Resistance of a lamp\*Required practical\*, lamps |   |   |   |   |
| 6. Circuit devicesThermistors, LDR’S |   |   |   |   |
| 7. Series circuitsPractical work, making circuits |  |  |  |  |
| 8. Parallel circuitsPractical work, making circuits |  |  |  |  |
| 9. Electricity at homeAC and DC, plugs practical |  |  |  |  |
| 10. Insulation, fuses and circuit breakersHow they work, selecting a fuse, Earthing |  |  |  |  |
| 11. PowerEquation, calculations |  |  |  |  |
| 12. More on powerEquation, calculations |  |  |  |  |
| 13. National GridTransformer kit, diagrams |  |  |  |  |

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| **P2 Electricity (continued)** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 14. Static electricityCharge, attract and repel, electric field |   |   |   |   |
| 15. Electric fields |   |   |   |   |

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| **P3 Particle Model** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Particle modelSolids , liquids and gases |   |   |   |   |
| 2. Density of materials equationUsing an equation, calculations |   |   |   |   |
| 3. Density of materials practical\*Required practical\*, density of irregular objects |   |   |   |   |
| 4. Internal energy and state changesMelting, condensing, boiling etc |   |   |   |   |
| 5. Specific Latent HeatGraph of changing state, equation, calculations |   |   |   |   |
| 6. Pressure in gasesEquation, calculations, work done |   |   |   |   |

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| **P4 Atomic structure** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Model of the atomPlum pudding model, Rutherford |   |   |   |   |
| 2. Mass numberCalculations |   |   |   |   |
| 3. Nuclear radiationAlpha, beta and gamma properties |   |   |   |   |
| 4. Nuclear EquationsCalculations on alpha and beta emission |   |   |   |   |
| 5. Half lifePlotting and interpreting graphs |   |   |   |   |
| 6. Irradiation and contaminationResearch |   |   |   |   |
| 7. Background radiationGraph, research |  |  |  |  |
| 8. Uses of nuclear radiationMedicine and other uses |   |   |   |   |

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| **P4 Atomic structure (continued)** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 9. Nuclear fissionChain reactions, nuclear reactions |   |   |   |   |
| 10. Nuclear fusionUses, issues |   |   |   |   |

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| **P5 Forces and interactions** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Contact and non contact forcesExamples of forces, scalar and vector |   |   |   |   |
| 2. Weight mass and gravityComparison, calculations |   |   |   |   |
| 3. Resultant forces and work doneExamples, equation |   |   |   |   |
| 4. Calculating forcesResolving forces |   |   |   |   |
| 5. Forces and elasticityHooke’s Law practical |   |   |   |   |
| 6. Investigating springsCalculations on spring constant |   |   |   |   |
| 7. Moments,Equation, calculations |  |  |  |  |
| 8. Levers and gearsApplications and uses |  |  |  |  |
| 9. Pressure in a fluidEquation p=F/a, calculations |  |  |  |  |
| 10. Atmospheric pressureModels, effects |  |  |  |  |
| 11. Speed and velocityScalar, vector, equation, calculations |  |  |  |  |
| 12. AccelerationEquations |  |  |  |  |
| 13. GraphsPlotting and interpreting graphs of motion |  |  |  |  |
| 14. Terminal velocityPlotting and interpreting graphs |  |  |  |  |
| 15. Newtons first and second lawsExamples, equations |  |  |  |  |
| 16. Inertia and Newtons third lawSummary notes, examples |  |  |  |  |
| 17. Investigating motion\*Required practical\* F = ma (ramps) |  |  |  |  |
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| **P5 Forces and interactions (continued)** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 18. Stopping distancesEquation, calculations |   |   |   |   |
| 19. Reaction timesPractical work |   |   |   |   |
| 20. FactorsExamples |   |   |   |   |
| 21. MomentumEquation, calculations, conservation of momentum |   |   |   |   |
| 22. Changes in momentumEquation, calculations, examples |   |   |   |   |

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| **P6 Waves** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Describing wavesLabels, properties and calculating wave speed |   |   |   |   |
| 2.Transverse and longitudinal wavesCompare and contrast |   |   |   |   |
| 3. Types of em wavesExamples and remembering the order |   |   |   |   |
| 4. EM waves properties and dangersResearch , comparison |   |   |   |   |
| 5. EM waves properties (uses)Research, microwaves, communication |   |   |   |   |
| 6. Reflection\*Required Practical work\*, law of reflection |  |  |  |  |
| 7. Refraction\*Required Practical work, refraction in a glass block |  |  |  |  |
| 8. Sound wavesThe ear, range of hearing |  |  |  |  |
| 9. Seismic wavesP and S waves, echo sounding P120 |  |  |  |  |
| 10. UltrasoundUses, examples, seismic waves |  |  |  |  |
| 11. Ripple tank\*Required practical\* P200 |  |  |  |  |
| 12. LensesHow lenses work, convex and concave, ray diagrams, magnification |   |   |   |   |
| 13. Visible lightColours, specular reflection, filters P226 |  |  |  |  |
| 14. Infra red\*Required practical\* black/silver cans Emit and absorb, examples |   |   |   |   |

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| **P7 Magnets and electromagnets** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Permanent and induced magnetsInvestigate materials, attract and repel |   |   |   |   |
| 2. Magnetic fieldsPlotting fields using compasses and iron filings |   |   |   |   |
| 3. Making magnetsMaking and testing magnets (stroking) |   |   |   |   |
| 4. ElectromagnetsMaking electromagnets, changing strength |   |   |   |   |
| 5. Investigating electromagnets Investigating the number of paper clips picked up |   |   |   |   |
| 6. Motor effectTheory, models |   |   |   |   |
| 7. Electric motorsLH rule, equation, calculations |  |  |  |  |
| 8. SpeakersThe function of loudspeakers and headphones |  |  |  |  |
| 9. Induced potentialMagnetic fields, generator effect |  |  |  |  |
| 10. DynamosExplain alternators and dynamos, interpret graphs  |  |  |  |  |
| 11. MicrophonesHow a moving coil microphone works  |  |  |  |  |
| 12. TransformersConstruction, equation, calculations P264 |   |   |   |   |

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| **P8 Space** |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Solar systemFormation, key terms, the Sun |   |   |   |   |
| 2. StarsLife cycle, similar to Sun, more massive, elements |   |   |   |   |
| 3. SatellitesOrbits, natural and artificial satellites, , values |   |   |   |   |
| 4. Red-shiftRed shift, Doppler effect, Big Bang  |   |   |   |   |
| 5. How the elements formedHeavy elements, light elements P286 |   |   |   |   |