**Year 11 Triple**

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| **P1 Energy** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1.Energy stores and systems  Forms of energy, energy changes |  |  |  |  |
| 2. Potential energy  Equation for PE , calculations |  |  |  |  |
| 3. Kinetic energy  Equation for KE, calculations |  |  |  |  |
| 4. SHC  Equation \*Required practical\*, aluminium blocks and heaters |  |  |  |  |
| 5. Conservation and power  Equation |  |  |  |  |
| 6. Reducing energy transfer  \*Required Practical\* - beakers |  |  |  |  |
| 7. Efficiency  Equation, calculations, demo practical , kettle |  |  |  |  |
| 8. Non renewable  Research |  |  |  |  |
| 9. Renewable  Research |  |  |  |  |

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| **P2 Electricity** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Current and circuit symbols  Draw and interpret circuit diagrams, identify symbols |  |  |  |  |
| 2. Resistance and Ohms Law  Equation, calculations |  |  |  |  |
| 3. Resistance of a wire  \*Required practical\*, length of wire |  |  |  |  |
| 4. I-V Characteristics  Diodes, lamps and resistors, |  |  |  |  |
| 5. Resistance of a lamp  \*Required practical\*, lamps |  |  |  |  |
| 6. Circuit devices  Thermistors, LDR’S |  |  |  |  |
| 7. Series circuits  Practical work, making circuits |  |  |  |  |
| 8. Parallel circuits  Practical work, making circuits |  |  |  |  |
| 9. Electricity at home  AC and DC, plugs practical |  |  |  |  |
| 10. Insulation, fuses and circuit breakers  How they work, selecting a fuse, Earthing |  |  |  |  |
| 11. Power  Equation, calculations |  |  |  |  |
| 12. More on power  Equation, calculations |  |  |  |  |
| 13. National Grid  Transformer kit, diagrams |  |  |  |  |

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

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| **P3 Particle Model** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Particle model  Solids , liquids and gases |  |  |  |  |
| 2. Density of materials equation  Using an equation, calculations |  |  |  |  |
| 3. Density of materials practical  \*Required practical\*, density of irregular objects |  |  |  |  |
| 4. Internal energy and state changes  Melting, condensing, boiling etc |  |  |  |  |
| 5. Specific Latent Heat  Graph of changing state, equation, calculations |  |  |  |  |
| 6. Pressure in gases  Equation, calculations, work done |  |  |  |  |

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| **P4 Atomic structure** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Model of the atom  Plum pudding model, Rutherford |  |  |  |  |
| 2. Mass number  Calculations |  |  |  |  |
| 3. Nuclear radiation  Alpha, beta and gamma properties |  |  |  |  |
| 4. Nuclear Equations  Calculations on alpha and beta emission |  |  |  |  |
| 5. Half life  Plotting and interpreting graphs |  |  |  |  |
| 6. Irradiation and contamination  Research |  |  |  |  |
| 7. Background radiation  Graph, research |  |  |  |  |
| 8. Uses of nuclear radiation  Medicine and other uses |  |  |  |  |

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| **P4 Atomic structure (continued)** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 9. Nuclear fission  Chain reactions, nuclear reactions |  |  |  |  |
| 10. Nuclear fusion  Uses, issues |  |  |  |  |

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| **P5 Forces and interactions** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Contact and non contact forces  Examples of forces, scalar and vector |  |  |  |  |
| 2. Weight mass and gravity  Comparison, calculations |  |  |  |  |
| 3. Resultant forces and work done  Examples, equation |  |  |  |  |
| 4. Calculating forces  Resolving forces |  |  |  |  |
| 5. Forces and elasticity  Hooke’s Law practical |  |  |  |  |
| 6. Investigating springs  Calculations on spring constant |  |  |  |  |
| 7. Moments,  Equation, calculations |  |  |  |  |
| 8. Levers and gears  Applications and uses |  |  |  |  |
| 9. Pressure in a fluid  Equation p=F/a, calculations |  |  |  |  |
| 10. Atmospheric pressure  Models, effects |  |  |  |  |
| 11. Speed and velocity  Scalar, vector, equation, calculations |  |  |  |  |
| 12. Acceleration  Equations |  |  |  |  |
| 13. Graphs  Plotting and interpreting graphs of motion |  |  |  |  |
| 14. Terminal velocity  Plotting and interpreting graphs |  |  |  |  |
| 15. Newtons first and second laws  Examples, equations |  |  |  |  |
| 16. Inertia and Newtons third law  Summary 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 distances  Equation, calculations |  |  |  |  |
| 19. Reaction times  Practical work |  |  |  |  |
| 20. Factors  Examples |  |  |  |  |
| 21. Momentum  Equation, calculations, conservation of momentum |  |  |  |  |
| 22. Changes in momentum  Equation, calculations, examples |  |  |  |  |

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| **P6 Waves** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Describing waves  Labels, properties and calculating wave speed |  |  |  |  |
| 2.Transverse and longitudinal waves  Compare and contrast |  |  |  |  |
| 3. Types of em waves  Examples and remembering the order |  |  |  |  |
| 4. EM waves properties and dangers  Research , 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 waves  The ear, range of hearing |  |  |  |  |
| 9. Seismic waves  P and S waves, echo sounding P120 |  |  |  |  |
| 10. Ultrasound  Uses, examples, seismic waves |  |  |  |  |
| 11. Ripple tank  \*Required practical\* P200 |  |  |  |  |
| 12. Lenses  How lenses work, convex and concave, ray diagrams, magnification |  |  |  |  |
| 13. Visible light  Colours, 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 magnets  Investigate materials, attract and repel |  |  |  |  |
| 2. Magnetic fields  Plotting fields using compasses and iron filings |  |  |  |  |
| 3. Making magnets  Making and testing magnets (stroking) |  |  |  |  |
| 4. Electromagnets  Making electromagnets, changing strength |  |  |  |  |
| 5. Investigating electromagnets  Investigating the number of paper clips picked up |  |  |  |  |
| 6. Motor effect  Theory, models |  |  |  |  |
| 7. Electric motors  LH rule, equation, calculations |  |  |  |  |
| 8. Speakers  The function of loudspeakers and headphones |  |  |  |  |
| 9. Induced potential  Magnetic fields, generator effect |  |  |  |  |
| 10. Dynamos  Explain alternators and dynamos, interpret graphs |  |  |  |  |
| 11. Microphones  How a moving coil microphone works |  |  |  |  |
| 12. Transformers  Construction, equation, calculations P264 |  |  |  |  |

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| **P8 Space** | | | | |
| **Student Objective** | **DR** | **Em** | **As** | **Ex** |
| 1. Solar system  Formation, key terms, the Sun |  |  |  |  |
| 2. Stars  Life cycle, similar to Sun, more massive, elements |  |  |  |  |
| 3. Satellites  Orbits, natural and artificial satellites, , values |  |  |  |  |
| 4. Red-shift  Red shift, Doppler effect, Big Bang |  |  |  |  |
| 5. How the elements formed  Heavy elements, light elements P286 |  |  |  |  |