# Guiseley School Revision Support

## Subject: Physics A-level

The URL for Guiseley School Physics Resources can be found here:

https://guiseleyschool.sharepoint.com/sites/GS_Subjects_PH/Year%2013/Forms/AllItems.aspx

Here you will find lots of resources including Knowledge Organisers and Past Paper Questions.

The 'Topic' on the table below refers to the areas that AQA will examine. How well do you know it?

Tick the face for each then focus your revision on the areas with a  or  .

Good Luck and ask your teacher if you are stuck!

| Topic | Exercise book/notes |  |  |  |
|---|---|---|---|---|
| **Section 1: Particles and Radiation** | | | | |
| Atomic Structure | | | | |
| Stable and Unstable Nuclei | | | | |
| Antiparticles and Photons | | | | |
| Hadrons and Leptons | | | | |
| Strange particles and conservation of properties | | | | |
| Quarks and Antiquarks | | | | |
| Particle interactions | | | | |
| **Section 2: Electromagnetic Radiation and Quantum Phenomena** | | | | |
| The photoelectric effect | | | | |
| Energy Levels in atoms | | | | |
| Wave-particle duality | | | | |
| **Section 3: Waves** | | | | |
| Progressive waves | | | | |
| Wave speed | | | | |

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| Transverse and longitudinal waves | | | | |
| Superposition and interference | | | | |
| Stationary waves | | | | |
| Investigating resonance | | | | |
| Diffraction | | | | |
| Two source interference | | | | |
| Young's double slit experiment | | | | |
| Diffraction gratings | | | | |
| Refractive index | | | | |
| Critical angle and Total internal reflection | | | | |
| **Section 4: Mechanics** | | | | |
| Scalars and vectors | | | | |
| Forces in equilibrium | | | | |
| Moments | | | | |
| Centre of mass and moments | | | | |
| Uniform acceleration | | | | |
| Displacement-time graphs | | | | |
| Velocity-time graphs | | | | |
| Acceleration-time graphs | | | | |
| Newton's laws of motion | | | | |
| Acceleration due to gravity | | | | |
| Projectile motion | | | | |
| Drag, lift and terminal velocity | | | | |
| Conservation of momentum | | | | |

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| Force, momentum and impulse | | | | |
| Work and power | | | | |
| Conservation of energy | | | | |
| **Section 5: Materials** | | | | |
| Density | | | | |
| Hooke's law | | | | |
| Stress and Strain | | | | |
| The Young's Modulus | | | | |
| Stress-strain and force-extension graphs | | | | |
| Brittle materials | | | | |
| **Section 6: Electricity** | | | | |
| Circuit diagrams | | | | |
| Current and Potential difference | | | | |
| Resistance | | | | |
| I-V characteristics | | | | |
| Resistivity | | | | |
| Determining the resistivity of a wire | | | | |
| Power and electrical energy | | | | |
| E.m.f. and internal resistance | | | | |
| Conservation of energy and charge in circuits | | | | |
| The potential divider | | | | |
| **Section 7: Further mechanics** | | | | |
| Circular motion | | | | |
| Centripetal force and acceleration | | | | |

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| Simple harmonic motion | | | | |
| Calculations with SHM | | | | |
| The mass spring system as a simple harmonic oscillator | | | | |
| The simple pendulum and other types of SHO | | | | |
| Free and forced vibrations | | | | |
| **Section 8: Thermal Physics** | | | | |
| Thermal energy transfer | | | | |
| The three gas laws | | | | |
| The ideal gas equation | | | | |
| Kinetic theory and the pressure of an ideal gas | | | | |
| Kinetic energy of gas molecules | | | | |
| Development of theories | | | | |
| **Section 9: Gravitational and electric fields** | | | | |
| Gravitational fields | | | | |
| Gravitational field strength | | | | |
| Gravitational potential | | | | |
| Orbits | | | | |
| Electric fields | | | | |
| Electric potential | | | | |
| Comparing gravitational and electric fields | | | | |
| **Section 10: Capacitors** | | | | |
| Capacitors | | | | |
| Energy stored by capacitors | | | | |
| Dielectrics | | | | |

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| Charging and discharging | | | | |
| Time constant and time to halve | | | | |
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| **Section 11: Magnetic fields** | | | | |
| Magnetic flux density | | | | |
| Investigating force on a current carrying wire | | | | |
| Forces on charged particles | | | | |
| Electromagnetic induction | | | | |
| Investigating Flux linkage | | | | |
| Faraday's law and Lenz's law | | | | |
| Alternating current | | | | |
| Transformers | | | | |
| **Section 12: Nuclear Physics** | | | | |
| Rutherford scattering | | | | |
| Measuring nuclear radius | | | | |
| Nuclear radius and density | | | | |
| Properties of nuclear radiation | | | | |
| Background radiation and intensity | | | | |
| Exponential law of decay | | | | |
| Half-life and its applications | | | | |
| Nuclear Decay | | | | |
| Mass defect and binding energy | | | | |
| Nuclear fission and fusion | | | | |
| Nuclear fission reactors | | | | |

| Section 13 A: Astrophysics | | | | |
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| Lenses | | | | |
| Optical telescopes | | | | |
| Comparing telescopes | | | | |
| Non-optical telescopes | | | | |
| Parallax and parsecs | | | | |
| Magnitude | | | | |
| Stars as black bodies | | | | |
| Stellar spectral classes | | | | |
| The Hertzsprung-Russel diagram | | | | |
| Evolution of Sun like stars | | | | |
| Supernovae, Neutron stars and Black Holes | | | | |
| Doppler effect and red-shift | | | | |
| The Big Bang theory | | | | |
| Detection of Binary stars, Exoplanets and Quasars | | | | |
| **Section 13 C: Engineering Physics** | | | | |
| Inertia and kinetic energy | | | | |
| Rotational motion | | | | |
| Torque, work and power | | | | |
| Flywheels | | | | |
| Angular momentum | | | | |
| The First Law of Thermodynamics | | | | |
| Non-flow processes | | | | |
| p-V diagrams | | | | |

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| Four stroke engines and indicator diagrams | | | | |
| Engine power and efficiency | | | | |
| The Second Law of Thermodynamics | | | | |
| Reversed heat engines | | | | |