A Level – Physics Syllabus Content and RAG Record

A level Paper 1:

RAG guidance – when you have finished learning about a topic colour in column 1 GREEN if you feel you understand it very well, AMBER if you understand it quite well but are not completely confident and RED if you feel your understanding is limited. Each time you revise a topic complete the next RAG column. This will help you to reflect on what you do/don't understand so that you can concentrate you efforts on the weaker areas. Hopefully you will see more greens appearing each time you revise a topic.

Key Topic –	**1**	**2**	**3**	**4**	**5**	**6**
Measurements and their errors						
Use of SI units and their prefixes						
Limitation of physical measurements						
Estimation of physical quantities						

2 - Particles and radiation						
Constituents of the atom						
Stable and unstable nuclei						
Particles, antiparticles and photons						
Particle interactions						
Classification of particles						
Quarks and antiquarks						
Applications of conservation laws						
The photoelectric effect						
Collisions of electrons with atoms						
Energy levels and photon emission						
Wave-particle duality						

3 - Waves						
Progressive waves						
Longitudinal and transverse waves						
Principle of superposition of waves and formation of stationary waves						
Interference						
Diffraction						
Refraction at a plane surface						

4 - Mechanics and materials						
Scalars and vectors						
Moments						
Motion along a straight line						
Projectile motion						
Newton's laws of motion						
Momentum						
Work, energy and power						
Conservation of energy						
Bulk properties of solids						
The Young modulus						

5 - Electricity						
Basics of electricity						
Current–voltage characteristics						
Resistivity						
Circuits						
Potential divider						
Electromotive force and internal resistance						

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	1	2	3	4	5	6
6.1 - Further mechanics						
Circular motion						
Simple harmonic motion (SHM)						
Simple harmonic systems						
Forced vibrations and resonance						

Paper 1.

What's assessed? Section 1 to 5 and 6.1

How is it assessed? 2 hour written exam worth 85 marks

Question type. 60 Marks of short and long answer questions and 25 multiple choice

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A level Paper 2:

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Key Topic –	**1**	**2**	**3**	**4**	**5**	**6**
***6.2* –Thermal physics**						
Thermal energy transfer						
Ideal gases						
Molecular kinetic theory model						

7 - Fields and their consequences						
Fields						
Newton's law						
Gravitational field strength						
Gravitational potential						
Orbits of planets and satellites						
Coulomb's law						
Electric field strength						
Electric potential						
Capacitance						
Parallel plate capacitor						
Energy stored by a capacitor						
Capacitor charge and discharge						
Magnetic flux density						
Moving charges in a magnetic field						
Magnetic flux and flux linkage						
Electromagnetic induction						
Alternating currents						
The operation of a transformer						

8 - Nuclear physics						
Rutherford scattering						
α, β and γ radiation						
Radioactive decay						
Nuclear instability						
Nuclear radius						
Mass and energy						
Induced fission						
Safety aspects						

Paper 2.

What's assessed? Section 6.2 ,7 and 8 AND assumed knowledge from 1 to 6.1

How is it assessed? 2 hour written exam worth 85 marks

Question type. 60 Marks of short and long answer questions and 25 multiple choice

A Level – Physics Syllabus Content and RAG Record

A Level Paper 3:

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Key Topic –	**1**	**2**	**3**	**4**	**5**	**6**
9 - Astrophysics						
Astronomical telescope consisting of two converging lenses						
Reflecting telescopes						
Single dish radio telescopes, I-R, U-V and X-ray telescopes						
Advantages of large diameter telescopes						
Classification by luminosity						
Absolute magnitude, M						
Classification by temperature, black-body radiation						
Principles of the use of stellar spectral classes						
The Hertzsprung-Russell (HR) diagram						
Supernovae, neutron stars and black holes						
Doppler effect						
Hubble's law						
Quasars						
Detection of exoplanets						

Paper 3.

What's assessed? Section A. Practical skills and data analysis

Section B. Astrophysics

How is it assessed? 2 hour written exam worth 80 marks

Question type.

Section A. 45 Marks of short and long answer questions on data analysis and practical skills.

Section B. 35 marks of short and long questions on Astrophysics.