Summary Bullet Points for OCR A-Level Physics A Specification (2015)

1. Take measurements, present data in tables and graphs, analyse and evaluate data. Know and use SI units and prefixes, convert between units.
2. Explain motion and the role of forces in motion, interpret graphical plots of motion and explain the effect of forces exerted by fluids.
3. Calculate and explain quantities in energy transfers, apply the principles of conservation of energy and momentum and Newton's Laws of Motion.
4. Explain and calculate the effects of forces on materials using the concepts of Hooke's Law, stress, strain and Young's Modulus.
5. Resolve forces, calculate the moments of forces and use the two conditions of equilibrium to solve problems.
6. Design, set up and interpret electrical circuits. Calculate electrical quantities in circuits and explain changes in current, voltage, resistance etc.
7. Explain and calculate progressive wave behaviour. Explain and calculate wave interference depending on phase difference and changing phase relationships for two or multiple sources of waves and standing waves.
8. Explain experimental evidence for the existence of photons and solve problems involving energy transfer by photons.
9. Explain and calculate heat energy transfer in solids, liquids and gases and explain changes to gas properties in terms of molecular behaviour.
10. Explain and calculate the motion of objects moving in circles and oscillating objects, explain resonance and damping.
11. Explain and calculate gravitational effects, state and explain evidence for the expanding Universe and the evolution of stars and the Universe.
12. Explain and calculate the function of capacitors in circuits, and the effect of circuit parameters on the discharge and charge profiles of capacitors.
13. Explain and calculate the behaviour of charged particles in uniform and radial electric and magnetic fields, also explain and calculate electromagnetic effects - motor force and induction.
14. Know a simplified version of the Standard Model of physics, describe and calculate parameters in radioactive transformations.
15. Describe and explain processes involved in X-ray imaging, CAT scans, radionuclide imaging and PET scans.