Level Two Physics – Checklist

# General Skills

* Appropriate use of significant figures
* Appropriate use of units
* Dimensional analysis

# 91170 – Waves

## Light

* Reflection (Newton’s law)
* Reflection (curved mirrors)
* Ray diagrams for mirrors
* Refraction (medium boundary)
* Snell’s law
* Total internal reflection
* Refraction (lenses)
* Ray diagrams for lenses

## Waves

* Reflection at a plane boundary
* Refraction at a plane boundary
* Phase changes and waveform changes at medium boundaries (for example, in water and strings)
* Diffraction
* Double-slit experiment
* Superposition and interference

# 91171 – Mechanics

## Motion

* Definitions of displacement, position, velocity, speed, and acceleration
* Kinematic equations (constant acceleration)
* Displacement-time graphs
* Velocity-time graphs
* Free-fall under gravity and terminal velocity
* Projectile motion
* Circular motion (constant speed)

## Forces

* Free-body diagrams
* Components
* Addition of force vectors
* Newton’s laws
* Torque
* Equilibrium conditions (forces and torques)
* Centripetal force and acceleration
* Hooke’s law (qualitative and quantitative)

## Momentum

* Definition of momentum
* Change of momentum and impulse in one dimension
* Relationship of momentum to force
* Conservation of momentum
* Definitions of elastic and inelastic collisions

## Energy

* Work
* Power
* Conservation of energy
* Gravitational potential energy
* Elastic potential energy
* Kinetic energy

# 91173 – Electrodynamics

## Static Electricity

* Definition of electric field
* Uniform electric fields
* Lorentz force equation for electric field
* Potential energy associated with electric field

## Direct Current Electricity

* Interpreting and producing circuit diagrams
* Definitions of voltage and current
* Resistors in series and parallel
* Energy and power in circuits

## Magnetism

* Definition of magnetic field
* Lorentz force equation for magnetic field
* Mechanical force felt by current-carrying wire
* Electromotive force felt by moving wire
* Simple generators