**A2 Level Core 4**

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|  | **What You Need To Know** | pe03020_[1] | pe03018_[1] | pe03019_[1] |
| 1. Algebra and Functions | * Rational functions * Simplification of rational expressions including factorising and cancelling. * Algebraic division and solving function involving algebraic fractions. * Partial Fractions |  |  |  |
| 1. 2D Coordinate Geometry | * Knowledge of Cartesian and parametric equation of curves and conversion between the two forms. |  |  |  |
| 1. Sequences and Series | * Binomial series for any ration power of n. * Series expansion of rational functions including the use of partial fractions. |  |  |  |
| 1. Trigonometry | * Use the formulae for and . * Use expressions for in the equivalent form of or . * Find solutions of trigonometric equation in a given interval. * Knowledge and use of double angle formulae and simple identities. |  |  |  |
| 1. Exponentials and Logarithms | * Understand exponential growth and decay. |  |  |  |
| 1. Differentiation and Integration | * Formation of simple differential equations, including in the context of growth and decay. * Analytical solution of simple first order differential equations with separable variable, including in application of practical problems. * Differentiation of simple functions defined implicitly or parametrically. This does not apply to 2nd order differentials. * Equations of tangents and normals for curves specified implicitly or in parametric form. * Simple cases of integration using partial fractions. |  |  |  |
| 1. Vectors | * Understand vector in 2 and 3 dimensions. * Magnitude of vectors * Algebraic operations of vector addition and multiplication by scalars, and the geometrical interpretations. * Position vectors * The distance between two points. * Vector equations of lines. Including the intersection of two straight lines in 2 and 3 dimensions; and parallel lines. * The scalar product and its use for calculating the angle between two lines. |  |  |  |