Unit Code H230/02
Qual Name AS Level Mathematics A
Qual Title Paper 2: Pure Mathematics and Mechanics

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required
1	1	6	1	1.05	Trigonometry	Use of sine rule. Use of area of a triangle ½absinC.
1	2	4	2	1.02	Algebra & Functions	Transforming a curve - obtaining new equation. Describing transformations.
1	3	3	1	1.01	Proof	Understanding and using logical connections.
1	4	6	2	1.02	Algebra & Functions	Completing the square. Determining the nature of the quadratic roots.
1	5	5	2, 3(PS)	1.02	Algebra & Functions	Condition for a line to be a tangent to a curve.
1	6	9	3(PS), 3(M)	1.06	Exponentials & Logarithms	Exponential functions/decay/equations.
1	7	8	3(PS)	1.05	Trigonometry	Trigonometric Identities. Solving trigonometric equations.
1	8	9	3(PS)	1.08	Integration	Definite integrals and areas.
2	1	4	2, 3(M)	3.03	Forces & Newton's Laws	Understanding magnitude of a vector & F = ma.
2	2	8	3(M)	3.02, 3.03	Kinematics, Forces & Newton's Laws	Connected particles with a pulley, finding T. Use of constant acceleration formulae.
2	3	13	2, 3(M)	3.02	Kinematics	Use of constant acceleration formulae. Non-uniform acceleration.
3	1	3	1	1.02	Algebra & Functions	Surds - rationalising a denominator.
3	2	6	1	1.02	Algebra & Functions	Quadratic - completing the square. Identifying a quadratic's turning point. Normal at the quadratic's turning point.
3	3	5	1	1.02	Algebra & Functions	Curve sketching. Transforming a curve - obtaining new equation.
3	4	6	2	1.02, 1.04	Sequences & Series, Algebra & Functions	Obtaining a binomial expansion. Polynomials - expanding brackets.
3	5	6	3(PS)	1.1	Vectors	Midpoint of two vectors. Distance between two vectors/magnitude. Parallel vectors/gradients.

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3	6	7	2, 3(PS)	1.02, 1.05	Algebra & Functions & Trigonometry	Trigonometric identities. Quadraticinequality in trigonometric context.
3	7	8	2, 3(PS)	1.08	Integration	Indefinite & definite integrals/area/quadratic work.
3	8	8	2, 3(PS)	1.02, 1.06	Algebra & Functions. Exponentals & Logarithms	Laws of logarithms used to modify an equation. Condition for a quadratic to have one real root.
4	1	2	1	3.03	Forces & Newton's Laws	Forces, expressed as vectors, in equilibrium.
4	2	8	3(M)	3.02	Kinematics	Velocity-time graph / non-uniform acceleration. Distance travelled from area under v-t graph.
4	3	16	2, 3(PS), 3(M)	3.03	Forces & Newton's Laws	Connected particles with a pulley. Constant acceleration equation work. Newton's Third Law.
5	1	5	1	1.05	Trigonometry	Cosine rule (or sine rule or isosceles triangle). Area of a segment.
5	2	5	2	1.02	Algebra & Functions	Curve sketching. Intersection of graphs and solution of equations.
5	3	7	2	1.07	Differentiation	Apply differentiation to find the normal to a curve.
5	4	9	2, 3(PS)	1.02, 1.06	Algebra & Functions, Exponentials & Logarithms	Use of the factor theorem. Factorisation of a cubic. Exponential equations. Laws of logarithms.
5	5	5	2	1.02	Algebra & Functions	Stationary point of a quadratic. Understanding graphical transformations.
5	6	6	2, 3(PS)	1.03	Coordinate Geometry in the x-y Plane	Properties of a circle and the circle equation.
5	7	13	2, 3(M)	1.02, 1.07	Algebra & Functions, Differentiation	Surds and rationalising a denominator. Locating a maximum. Volume of a prism, pythagoras.
6	1	3	1	3.03	Forces & Newton's Laws	Forces, expressed as vectors, in equilibrium.
6	2	6	3(M)	3.03	Forces & Newton's Laws	Newton's First Law. Newton's Second Law. Connected bodies.
6	3	6	3(PS), 3(M)	3.02	Kinematics	Non-uniform acceleration. Finding time when instantaneously at rest. Integration for displacement, then distance.
6	4	10	3(PS), 3(M)	3.02	Kinematics	Constant acceleration (including zero). Interpretation of the problem. Distance calculation.