Advance information June 2022

A-level Mathematics 7357

Version 1.0

Because of the ongoing impacts of the Coronavirus (COVID-19) pandemic, we are providing advance information on the focus of June 2022 exams to help students revise.

This is the advance information for A-level Mathematics 7357.

Information

- This advance information covers all examined components.
- Each bullet point gives the major focus of the content for one question. All questions are covered.
- Where a bullet point lists multiple topics for a question, the most relevant topic is listed first.
- The bullet points are listed in specification order according to the major topic area (ie lettered headings in the specification) of the first topic referred to in each bullet point. Any further sub-ordering required is alphabetical.
- Due to the synoptic nature of some questions, not all relevant topics are listed. Synoptic questions are those that bring together knowledge, skills and understanding from across the specification.
- It is **not** permitted to take this advance information into the examination.

Advice

- Students and teachers should consider how to focus their revision of other non-listed parts of the specification, which may be of supplementary use in questions as well as aiding general understanding.

Focus of the June 2022 exam

7357/1 Paper 1
- Factor theorem, cubic graphs
- Transformations of graphs
- Conversion between parametric and Cartesian forms, trigonometric identities
- Coordinate geometry, equations of straight lines and circles
- Arithmetic sequences and series, inequalities
- Periodic sequences
- Sum to infinity of a geometric series, exact values of trigonometric functions
- Graphs of trigonometric functions, transformations of graphs
- Small angle approximations of trig functions, binomial expansion

- Implicit differentiation, stationary points of curves
- Tangents to a curve
- The gradient function of a curve
- Area under a curve, integration techniques, trapezium rule
- Integration by substitution, differentiation of trigonometric functions, trigonometric identities
- Newton-Raphson method, areas of sectors and triangles, locating roots by considering a change of sign

7357/2 Paper 2
Section A
- Proofs by counterexample and exhaustion
- Transformations of graphs, sketch curves defined by simple equations
- Coordinate geometry of the circle
- Binomial expansion, integration of polynomials
- Sine and cosine rules
- Laws of logarithms
- Convex and concave sections of curves
- Differentiation from first principles
- Maximum and minimum points of polynomials
- Solving differential equations, exponential models, partial fractions

Section B
- Position vectors, constant acceleration formulae in two dimensions
- Calculus in kinematics using vectors, calculus for exponential and trigonometric functions, calculus techniques, magnitude of a vector
- Constant acceleration formulae
- Projectile motion, trigonometric functions
- Velocity-time graphs
- Forces in equilibrium in 2D
- Newton's laws of motion, friction, resolving forces, constant acceleration formulae
- Weight and acceleration due to gravity
- Moments

7357/3 Paper 3
Section A
- Proof by contradiction
- Inverse functions
- Validity of binomial expansion
- Graphs of trigonometric functions, trigonometric equations
- Using logarithmic graphs to estimate parameters in non-linear relationships
- Connected rates of change
- Parametric differentiation, parametric models
- Stationary points of curves, graphs of a function, domains and ranges of a function, simultaneous equations
- Area between two curves
- Integrating powers of x

Section B
- Critique statistical sampling
- Sampling methods and terminology

- Interpreting statistical diagrams, distributions
- Probability using Venn diagrams, conditional probability, independent events
- Binomial distribution, binomial probabilities
- Normal distribution properties and probabilities, calculations with summary statistics
- Parameters of a normal distribution
- Hypothesis test for mean of a normal distribution
- Hypothesis test for proportion using binomial distribution

END OF ADVANCE INFORMATION