Advance information June 2022

AS Further Mathematics (7366)

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 AS Further Mathematics (7366).

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

7366/1 Paper 1

- Proof by induction
- Arithmetic of complex numbers in modulus/argument form
- Arithmetic of complex numbers in real/imaginary form
- Loci in the Argand diagram
- Inverse 2 x 2 matrices
- Matrices representing 3D transformations
- Graphs of rational functions with linear numerator and denominator, associated inequalities, transformations of curves
- Graphs of rational functions with quadratic numerator and denominator, quadratic theory to find turning points

- Method of differences
- Roots and coefficients of polynomials
- Volume of revolution, equations of conics
- Intersection of lines in 3D, scalar product
- Polar curves
- Definitions of hyperbolic functions
- Logarithmic forms of inverse hyperbolic functions, roots and coefficients of polynomials

7366/2M Paper 2 Mechanics

- Dimensional analysis to predict formulae and check for dimensional consistency
- Collisions in 2D, conservation of momentum
- Impulse of a variable force, relationship between impulse and momentum
- Momentum and restitution for collisions in 1D
- Kinetic energy and gravitational potential energy
- Power
- Work done by a constant force
- Horizontal circular motion, Hooke's law

7366/2S Paper 2 Statistics

- Distributions of discrete random variables (DRVs)
- Measures of average and spread for DRVs, linear functions of DRVs
- Hypothesis test for mean of Poisson distribution, properties of Poisson distribution, Type I and II errors
- Expectation of functions of a CRV and of sums of independent RVs, probability density function, probabilities, medians and quartiles
- Mean, variance and standard deviation of continuous random variable (CRV)
- Chi squared test for association, pooling
- Confidence interval for mean of a normal distribution with known variance

7366/2D Paper 2 Discrete

- Euler's formula for connected planar graphs
- Subgraphs, trees, simple-connected graphs
- Travelling salesperson problem
- Maximum-flow minimum-cut theorem
- Formulating and solving linear programming problems
- Critical path analysis, earliest start time, latest finish time, critical path
- Optimal mixed strategies for zero-sum game
- Cayley tables, commutativity, identity element

END OF ADVANCE INFORMATION