

# SECONDARY 4

SUBJECT	Components / Topics	Format	Marks	Duration with Buffer
E MATHS	<b>NUMBER AND ALGEBRA</b> <ul style="list-style-type: none"> <li>Numbers and their operations</li> <li>Ratio and proportion</li> <li>Percentage</li> <li>Rate and Speed</li> <li>Algebraic expressions and formulae</li> <li>Functions and graphs</li> <li>Equations and inequalities</li> <li>Set language and notation</li> <li>Matrices</li> <li>Problems in real-world contexts</li> </ul>	<b>Paper 1:</b> About 26 short answer questions.	90	2 h 30 min
	<b>GEOMETRY AND MEASUREMENT</b> <ul style="list-style-type: none"> <li>Angles, triangles and polygons</li> <li>Congruence and similarity</li> <li>Properties of circles</li> <li>Pythagoras' theorem and trigonometry</li> <li>Mensuration</li> <li>Coordinate geometry</li> <li>Vectors in two dimensions</li> <li>Problems in realworld contexts</li> </ul> <b>STATISTICS AND PROBABILITY</b> <ul style="list-style-type: none"> <li>Data analysis</li> <li>Probability</li> </ul>	<b>Paper 2:</b> 9 to 10 questions of varying marks and lengths. The last question in this paper will focus specifically on applying mathematics to a real-world scenario.	90	2 h 30 min
A MATHS	<b>ALGEBRA</b> <ul style="list-style-type: none"> <li>Quadratic functions</li> <li>Equations and inequalities</li> <li>Surds</li> <li>Polynomials and cubic equations</li> <li>Partial fractions</li> <li>Binomial expansions</li> <li>Exponential and logarithmic functions</li> </ul>	<b>Paper 1:</b> 12 – 14 questions of varying marks and lengths, up to 10 marks per question.	90	2 h 30 min
	<b>GEOMETRY AND TRIGONOMETRY</b> <ul style="list-style-type: none"> <li>Trigonometric functions and equations</li> <li>Trigonometric graphs</li> <li>Trigonometric identities and R-Formulae</li> <li>Coordinate geometry in two dimensions</li> <li>Proofs in plane geometry</li> </ul> <b>CALCULUS</b> <ul style="list-style-type: none"> <li>Differentiation and its applications</li> <li>Integration and its applications</li> <li>Kinematics</li> </ul>	<b>Paper 2:</b> 9 – 11 questions of varying marks and lengths, up to 10 marks per question.	90	2 h 30 min
PHYSICS	<b>MEASUREMENTS</b> <ul style="list-style-type: none"> <li>Physical Quantities, Units &amp; Measurements</li> </ul> <b>NEWTONIAN PHYSICS</b> <ul style="list-style-type: none"> <li>Kinematics</li> <li>Dynamics I: Mass &amp; Weight</li> <li>Dynamics II: Forces</li> <li>Turning Effects of Forces</li> <li>Pressure</li> <li>Energy</li> </ul>	<b>Paper 1 (40 marks):</b> 40 MCQs	40	1 h 5 min
	<b>THERMAL PHYSICS</b> <ul style="list-style-type: none"> <li>Kinetic Particle Model of Matter</li> <li>Thermal Processes</li> <li>Thermal Properties of Matter</li> </ul> <b>NEWTONIAN PHYSICS</b> <ul style="list-style-type: none"> <li>Kinematics</li> <li>Dynamics I: Mass &amp; Weight</li> <li>Dynamics II: Forces</li> <li>Turning Effects of Forces</li> <li>Pressure</li> <li>Energy</li> </ul> <b>WAVES</b> <ul style="list-style-type: none"> <li>General Wave Properties I: Introduction</li> <li>General Wave Properties II: Sound</li> <li>Electromagnetic Waves</li> <li>Light</li> </ul> <b>ELECTRICITY &amp; MAGNETISM</b> <ul style="list-style-type: none"> <li>Static Electricity</li> <li>Current of Electricity</li> <li>D.C. Circuits</li> <li>Practical Electricity</li> <li>Magnetism</li> <li>Electromagnetism</li> <li>Electromagnetic Induction</li> </ul> <b>RADIOACTIVITY</b> <ul style="list-style-type: none"> <li>Radioactivity</li> </ul>	<b>Paper 2 (80 marks):</b> Section A (50 marks) <ul style="list-style-type: none"> <li>Usually 9-12 questions of varying marks (usually 6-8 marks per question)</li> </ul> Section B (30 marks) <ul style="list-style-type: none"> <li>3 long questions of 8-12 marks (but usually 10 marks each), with 3rd question (10 marks) given as EITHER/OR question for students to choose. (For ME, students are not given the choice)</li> </ul>	80	2 h
CHEMISTRY	<b>EXPERIMENTAL CHEMISTRY</b> <ul style="list-style-type: none"> <li>Experimental Design</li> <li>Methods of Purification and Analysis</li> </ul> <b>THE PARTICULATE NATURE OF MATTER</b> <ul style="list-style-type: none"> <li>Kinetic Particle Theory</li> <li>Atomic Structure</li> </ul>	<b>Paper 1 (40 marks):</b> 40 compulsory MCQs	40	1 h 5 min
	<b>CHEMICAL BONDING AND STRUCTURE</b> <ul style="list-style-type: none"> <li>Chemical Bonding</li> <li>Structure and Properties of Materials</li> </ul> <b>CHEMICAL CALCULATIONS</b> <ul style="list-style-type: none"> <li>Formulae and Equation Writing</li> <li>Mole Concept and Stoichiometry</li> </ul> <b>ACID-BASE CHEMISTRY</b> <ul style="list-style-type: none"> <li>Acids and Bases</li> <li>Salts</li> <li>Ammonia</li> </ul> <b>QUALITATIVE ANALYSIS</b> <ul style="list-style-type: none"> <li>Qualitative Analysis</li> </ul> <b>REDOX CHEMISTRY</b> <ul style="list-style-type: none"> <li>Oxidation and Reduction</li> <li>Electrochemistry</li> </ul> <b>PATTERNS IN THE PERIODIC TABLE</b> <ul style="list-style-type: none"> <li>The Periodic Table</li> <li>The Reactivity Series</li> </ul> <b>CHEMICAL ENERGETICS</b> <ul style="list-style-type: none"> <li>Chemical Energetics</li> </ul> <b>RATE OF REACTIONS</b> <ul style="list-style-type: none"> <li>Rate of Reactions</li> </ul> <b>ORGANIC CHEMISTRY</b> <ul style="list-style-type: none"> <li>Fuels and Crude Oil</li> <li>Hydrocarbons</li> <li>Alcohols, Carboxylic Acids and Esters</li> <li>Polymers</li> </ul> <b>MAINTAINING AIR QUALITY</b>	<b>Paper 2 (80 marks):</b> Section A (50 marks) <ul style="list-style-type: none"> <li>a variable number of compulsory structured questions</li> </ul> Section B (30 marks) <ul style="list-style-type: none"> <li>3 questions</li> <li>first two questions are compulsory questions, one of which will be a data-based question of 8-12 marks</li> <li>last question will be in an either/or form and will carry 10 marks (For ME, students are not given the choice)</li> </ul>	80	2 h
BIOLOGY	<b>CELLS AND THE CHEMISTRY OF LIFE</b> <ul style="list-style-type: none"> <li>Cell Structure and Organisation</li> <li>Movement of Substances</li> <li>Biological Molecules</li> </ul>	<b>Paper 1 (40 marks):</b> 40 compulsory MCQs	40	1 h 5 min
	<b>THE HUMAN BODY - MAINTAINING LIFE</b> <ul style="list-style-type: none"> <li>Nutrition in Humans</li> <li>Transport in Humans</li> <li>Respiration in Humans</li> <li>Excretion in Humans</li> <li>Homeostasis, Co-ordination and Response in Humans</li> <li>Infectious Diseases in Humans</li> </ul> <b>LIVING TOGETHER - PLANTS, ANIMALS, AND ECOSYSTEMS</b> <ul style="list-style-type: none"> <li>Nutrition and Transport in Flowering Plants</li> <li>Organisms and their Environment</li> </ul> <b>CONTINUITY OF LIFE</b> <ul style="list-style-type: none"> <li>Molecular Genetics</li> <li>Reproduction</li> <li>Inheritance</li> </ul>	<b>Paper 2 (80 marks):</b> Section A (70 marks) <ul style="list-style-type: none"> <li>a variable number of compulsory structured questions, with one free response question and one data-based question as the last two questions. The last two questions will carry a total of 20 marks</li> </ul> Section B (10 marks) <ul style="list-style-type: none"> <li>40 MCQs</li> </ul>	80	2 h