
This book is primarily an extensive bank of practice questions (with answers) serving the needs of AS/A level candidates either as a course support text or as a revision aid. It is worth emphasising straightforwardly that the exercises are the book’s great strength: they are inventive, well-structured (being graded A, B, C where A are single-skill questions and C are essentially A level questions) and notably fresh – the author has resisted any urge to recycle old examination questions. Coverage extends as far as hypothesis tests for two means, $\chi^2$-tests and the non-parametric sign and Wilcoxon tests. Perhaps it is ‘top of the syllabus heavy’: I was surprised not to find coding/pooling for means/variances, counting problems, or non-polynomial probability density function questions. Each set of exercises is prefaced by a well-chosen collection of worked examples: these are clearly set out in a friendly style using ‘bubbles’ for reminders. Less successful to my eyes were the ‘Key point’ summaries: these are very thin and their very baldness tends to magnify lapses and highlight omissions. For example, taking variance $=\frac{\sum x^2}{n} - \bar{x}^2$ as a definition struck me as eccentric; the probability summary only really covers conditional probability; there is an unfortunate discrete/continuous transposition near the top of p. 28; and both the statement of the Central Limit Theorem (p. 86) and the definition of a confidence interval (p. 90) are much too sloppy. And I always like to mention the equation of a Normal distribution (to bring home that it is not any old bell-shaped distribution!) and the fact that Spearman’s rank is precisely the product moment correlation coefficient for the rankings. To balance these gripes, the book is excellent on protocols for hypothesis testing, the ‘big three’ distributions and their mutual approximations, niggly details (such as continuity corrections, Yates, and modelling assumptions for bivariate analysis) and the summary on Data Presentation (including an inventive ‘spot the errors’ exercise) has gone straight into my teaching file.

Overall then, a well-organised compendium of fresh, bread-and-butter statistics questions which I could see as being particularly valuable in conjunction with a modular series of texts where (with zealous or resitting candidates) it is all too easy to run out of questions. But do check carefully against your own syllabus requirements: you may find some surprises.

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This book supplies a comprehensive bank of practice questions to support an AS/A level course in mechanics. With the possible exceptions of light frameworks and dimensional analysis, all topics on current ‘pure with mechanics’ syllabuses are covered, including variable acceleration, non-uniform circular motion, oblique impact, calculus methods for Centre of Mass and SHM; the coverage is notably thorough on motion in 2 dimensions and energy, work, power, momentum, impulse and impacts. The questions are crisp, sharply focused and workman-like; they are usefully graded A, B, C in terms of increasing difficulty and sophistication. In particular, the C grade questions are not just recycled past examination questions, but some arguably do have a rather dated feel relative to some recent syllabus innovations.

The exercise sets are supplemented by worked examples and summaries of key points: these are brisk and contribute to my personal hunch that some of the text may
be a shade ambitious for the average student, for whom arguably the greatest hurdles are the initial stages such as coping with vectors, setting up force diagrams, formulating equations and matching mathematics to physical intuition. I noticed one or two oddities: a rearranged equation on p. 7 should read $v - u = at$ and the highlighted tangential acceleration on p. 118 should be $r\dot{\theta}$; also $s = vt - \frac{1}{2}at^2$ is not mentioned but $2\mathbf{a.r} = v^2 - u^2$ is, although the scalar product is nowhere defined or used!

The teaching of mechanics tends to excite strong passions and Gazette readers may have views about some of the authors' decisions such as to treat projectiles entirely vectorially, to tend to leave $g$ in equations until numerical evaluation at the end, to use exclusively modulus of elasticity (and not stiffness) in Hooke's Law and, on occasions, to suppress forces from force diagrams if they are not needed in the analysis. But the book's undoubted strength is in its outstanding collection of well-constructed exercises: these will almost certainly cover your syllabus needs and usefully augment areas in which some of the recent modular texts are apt to be rather thin.

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Calculus mysteries and thrillers is a collection of 11 problems suitable for student projects. Each problem is introduced by means of a short story and the projects take the form of a report to be prepared for a particular purpose. In effect, the student is put in the position of a mathematical consultant reporting to a client.

The projects are classified as easy, moderate or difficult, though the term is relative. For example, 'The Case of the Swivelling Spotlight' is described as difficult 'because it is likely to be assigned early in a course', though the mathematics involved (tangents, normals and Newton-Raphson applied to a cubic) is within the scope of an A level student. Indeed, most of the projects can be solved with A level mathematics, the exceptions being three that require knowledge of arc-length or surface of revolution and one that involves an application of the intermediate value theorem. However, given the difficulties that students tend to experience when asked to apply recently learned knowledge, some might prefer to use the problems in the first year of a university course.

Model solutions, written in the style appropriate to the context, are provided for all eleven problems. The publishers give permission for purchasers to copy the projects for their students, so a mathematics department could legitimately buy a single copy. This excellent classroom resource represents excellent value for money.

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Understanding statistics is designed to cover all A level syllabi and also to be suitable for introductory statistics courses at university level. It is a large book and is very comprehensive in its content. It has plenty of exercises, both single topic and miscellaneous exercises at the end of each section. Answers to the exercises are provided.

The book is well written and easy to read, with lots of helpful asides and notes.