Sankhyā : The Indian Journal of Statistics
2006, Volume 68, Part 1, p 172-173

Linear Models for Optimal Test Designs
Wim J. van der Linden
Statistics for Social and Behavioral Sciences
(2005) Springer Verlag, (xxiv)+440 pp.
Price Euro 69.50, ISBN 0-387-20272-2

Test design is the main activity of all educational and psychological testing. The book by van der Linden discusses the various aspects, logistics, problems and solutions of test designs.

The book begins with the discussion on the history of test theory and test design. It passes through the history of classical test design to the modern test design. Subsequently, test design problems are presented and formulated as multi-objective constrained optimization problem, throughout a large part of the book. The presentation includes a large variety of problems from the daily practice of testing.

Models for assembly of tests to an absolute or relative target for their information functions are explicitly discussed. Chapter 2 deals with the introduction of standard language for formulating test specifications. Modeling and solving test assembly problems are discussed in Chapters 3 and 4. Chapter 3 uses simple linear models, whereas Chapter 4 uses mathematical programming, specially integer and combinatorial programming. Models for assembling single tests and multiple tests are illustrated in Chapters 5 and 6. Assembling tests with multiple sets is given in Chapter 7. Chapter 8 deals with assembling tests of multidimensional abilities. Assembling adaptive tests in Chapter 9 adds flavor to the presentation. The question of designing item banks for optimal support of programs with fixed and adaptive sets is a very important issue in test design. Designing item pools in such scenario is discussed in Chapters 10 and 11 of the book.

The book has potential as a good reference book and a good guide to the researchers in this area. Exercises are provided in every chapters. Answers to the exercises of the various chapters are provided at the end of the book. This is an additional important feature of the book.

Various empirical examples in different chapters add flavor to the presentation and make the book more attractive.The readers of this very well-

written book does not need much mathematical or statistical background, and hence it is reachable to a wider audience.

Atanu Biswas
Stat. Math. Division
Indian Statistical Institute
203 Barrackpore Trunk Road
Kolkata 700 108
E-mail: atanu@isical.ac.in