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Autore	Singh V. P (Vijay P.)
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Nota di contenuto	Cover; Title Page; Copright; Contents; Preface; Acknowledgments; Chapter 1 Introduction; 1.1 Systems and their characteristics; 1.1.1 Classes of systems; 1.1.2 System states; 1.1.3 Change of state; 1.1.4 Thermodynamic entropy; 1.1.5 Evolutive connotation of entropy; 1.1.6 Statistical mechanical entropy; 1.2 Informational entropies; 1.2.1 Types of entropies; 1.2.2 Shannon entropy; 1.2.3 Information gain function; 1.2.4 Boltzmann, Gibbs and Shannon entropies; 1.2.5 Negentropy; 1.2.6 Exponential entropy; 1.2.7 Tsallis entropy; 1.2.8 Renyi entropy; 1.3 Entropy, information, and uncertainty 1.3.1 Information 1.3.2 Uncertainty and surprise; 1.4 Types of uncertainty; 1.5 Entropy and related concepts; 1.5.1 Information content of data; 1.5.2 Criteria for model selection; 1.5.3 Hypothesis testing; 1.5.4 Risk assessment; Questions; References; Additional References; Chapter 2 Entropy Theory; 2.1 Formulation of entropy; 2.2 Shannon entropy; 2.3 Connotations of information and entropy; 2.3.1 Amount of information; 2.3.2 Measure of information; 2.3.3 Source of

information; 2.3.4 Removal of uncertainty; 2.3.5 Equivocation; 2.3.6 Average amount of information; 2.3.7 Measurement system  
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 Chapter 3 Principle of Maximum Entropy

## Sommario/riassunto

Entropy Theory and its Application in Environmental and Water Engineering responds to the need for a book that deals with basic concepts of entropy theory from a hydrologic and water engineering perspective and then for a book that deals with applications of these concepts to a range of water engineering problems. The range of applications of entropy is constantly expanding and new areas finding a use for the theory are continually emerging. The applications of concepts and techniques vary across different subject areas and this book aims to relate them directly to practical problems