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Over the past few decades there has been a prolific increase in research and development in area of heat transfer, heat exchangers and their associated technologies. This book is a collection of current research in the above mentioned

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areas and discusses experimental, theoretical and calculation approaches and industrial utilizations with modern ideas and methods to study heat transfer for single and multiphase systems. The topics considered include various

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training in engineering education, as emphasized by the AICTE, has motivated the authors to compile the work of various engineering laboratories into a systematic Practical laboratory book. The

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photon energy. It then goes onto cover day lighting parameters, laws of thermodynamics including energy and exergy analysis, photovoltaic modules and materials, PVT collectors, and

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case of all derived equations
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solutions by cross checking**

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**and understanding Radiation
shape factor charts and
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Thermal Radiation Mass Transfer

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chemical technology, and
biochemical engineering for
courses in mass transfer,**

**separation processes,
transport processes, and unit
operations. The principles of
mass transfer, both
diffusional and convective
have been comprehensively
discussed. The application of
these principles to separation**

processes is explained. The more common separation processes used in the chemical industries are individually described in separate chapters. The book also provides a good understanding of the

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flow pattern, emerge in all of these rotating flows. The main part of this work deals with rotating flows caused by system rotation, which includes several rotating-disk configurations and straight pipes rotating about a parallel

axis. Swirl flows are studied in some of the configurations mentioned above. Curvilinear flows are investigated in different geometries of two-pass ribbed and smooth channels with 180° bends. The author demonstrates that the

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Opportunity areas may be found in design, materials, or working fluids. In this sense, the present book compiles some advances in the matter of design (three chapters) and working fluids (one chapter). An

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introductory chapter also is presented.

Many heat transfer problems are time dependent. Such unsteady or transient problems typically arise when the boundary conditions of a system are changed. For

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example, if the surface temperature of a system is altered, the temperature at each point in the system will also begin to change. The changes will continue to occur until a steady state temperature distribution is

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reached. Consider a hot metal billet that is removed from a furnace and exposed to a cool air stream. Energy is transferred by convection and radiation from its surface to the surroundings. Energy transfer by

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conduction also occurs from the interior of the metal to the surface, and the temperature at each point in the billet decreases until a steady state condition is reached. The final properties of the metal will

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depend significantly on the time - temperature history that results from heat transfer. Controlling the heat transfer is one key to fabricating new materials with enhanced properties. The author's objective in

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this textbook is to develop procedures for determining the time dependence of the temperature distribution within a solid during a transient process, as well as for determining heat transfer between the solid

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and its surroundings. The nature of the procedure depends on assumptions that may be made for the process. If, for example, temperature gradients within the solid may be neglected, a comparatively simple

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approach, termed the lumped capacitance method or negligible internal resistance theory, may be used to determine the variation of temperature with time. The entire book has been thoroughly revised

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and a large number of solved examples and additional unsolved problems have been added. This book contains comprehensive treatment of the subject matter in simple and direct language. The book comprises eight

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chapters. All chapters are saturated with much needed text supported and by simple and self-explanatory examples.

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Applications
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