

## CONTENTS

	Signs and Symbols.. .....	v
	Natural Constants and Conversion factors.. .....	viii
	Foreword .....	1
	Table of Contents .....	3
	Preface .....	4
1.	The Basics, I: Force and Work .....	5
2.	The Basics, II: Kinetic and Potential Energy.. .....	18
3.	Interchange of Kinetic and Potential Energy.. .....	22
4.	Work and Energy Relations for Ideal Gases .....	33
5.	The Equation of State and the Representation of State Changes and Work.. .....	49
6.	Heat Capacities of Gases .....	61
7.	Heat Capacities of Solids: The Nature of Heat.. .....	67
8.	Other Forms of Energy.. .....	75
9.	Dilemmas of Energy and the Microstructure of Matter.. .....	86
10.	Wave Properties of Matter .....	98
11.	Waves, Energy Levels and Densities of States .....	113
12.	Molecules and Chemical Bonds: Energy Storage in Molecules .....	119
13.	Energy and the First Law of Thermodynamics.. .....	131
14.	Energy Relations in Chemical Processes: Combustion.. .....	136
15.	Distributions .....	151
16.	Microstates, Macrostates and Zermelo's Paradox .....	164
17.	A Microscopic View of Entropy and the Second Law of Thermodynamics .....	173
18.	The Thermal Definition of Entropy and Macroscopic Statement of the Second Law of Thermodynamics.. .....	178
19.	The <b>Carnot</b> Engine and Efficiency.. .....	186
20.	Free Energies and Criteria of Merit.. .....	193
21.	Availability and Criteria of Merit .....	205