

Contents

Guide to Fundamental Definitions	xiii
General References	xv
Introduction	1
Chapter 1	States of a Model System 5
Chapter 2	Entropy and Temperature 27
Chapter 3	Boltzmann Distribution and Helmholtz Free Energy 55
Chapter 4	Thermal Radiation and Planck Distribution 87
Chapter 5	Chemical Potential and Gibbs Distribution 117
Chapter 6	Ideal Gas 151
Chapter 7	Fermi and Bose Gases 181
Chapter 8	Heat and Work 225
Chapter 9	Gibbs Free Energy and Chemical Reactions 261
Chapter 10	Phase Transformations 275
Chapter 11	Binary Mixtures 309
Chapter 12	Cryogenics 333
Chapter 13	Semiconductor Statistics 353
Chapter 14	Kinetic Theory 389
Chapter 15	Propagation 423
Appendix A	Some Integrals Containing Exponentials 439
Appendix B	Temperature Scales 445

Contents

Appendix C	Poisson Distribution	453
Appendix D	Pressure	459
Appendix E	Negative Temperature	460
Index		465