

Equations, relations, concepts

Chapter 2

Lorentz transformations

Time dilation

Length contraction

“interval” invariant

relativistic velocity transformation

relativistic momentum

relativistic energy

Thermodynamics, Chapter 19

Heat capacity

Specific heat

Heats of transformation

Work

P-V diagrams

Thermodynamic cycles

First law of thermodynamics

Thermodynamics, Chapter 20

Ideal gas law

...and kinetic energy of molecules

Maxwell speed distribution

Isothermal transformation

Equipartition theorem and degrees of freedom

assignment

Molar specific heats, constant V, constant P

Adiabatic transformations

Thermodynamics, Chapter 21

Second law of thermodynamics

Engines

Carnot engine

Entropy relation

reversibility

Chapter 3

photon energy, Planck's constant

Wien Displacement law

Planck's blackbody formula

Photoelectric formula, Einstein

Chapter 4

Compton formula

Bohr Formula

Balmer Formula

Correspondence principle

Reduced mass relation

Chapter 5

Bragg's law

De Broglie's formula

Wave motion formulae, superposition

Single and double slit diffraction

Uncertainty relation

Copenhagen interpretation

Probability distributions, wavefunctions

Particle in a box

Chapter 6

Schrodinger equation

Time independent solutions to SE

Expectation value

Infinite square well

Finite square well

Simple harmonic oscillator solutions

Potential barriers

Chapter 7

Use of hydrogenic, single electron atom solutions to SE

Quantum numbers

Magnetic moment, Bohr magneton

Spin

Selection rules

Hydrogenic probability distributions

Chapter 12

Nuclear size

Nuclear nomenclature

Binding energy

“curve of binding energy”

independent particle model

liquid drop model

radioactive decay law

alpha, beta, gamma decays, electron capture

Q for decays

Carbon dating

Chapter 13

Q for reactions, exo- and endo-ergic

Nuclear resonances

Induced fission

Chain reactions

Proton-proton fusion chain

Chapter 14

Yukawa particle

Fermi's model for beta decay