

BIBLIOGRAPHY

TEXTBOOKS

For additional reading on the topics covered in this book, you may like to consult one or more of the following books. Some of these books however are more advanced and contain many more topics than this book.

- 1 **Ordinary Level Physics**, A.F. Abbott, Arnold-Heinemann (1984).
- 2 **Advanced Level Physics**, M. Nelkon and P. Parker, 6th Edition, Arnold-Heinemann (1987).
- 3 **Advanced Physics**, Tom Duncan, John Murray (2000).
- 4 **Fundamentals of Physics**, David Halliday, Robert Resnick and Jearl Walker, 7th Edition John Wiley (2004).
- 5 **University Physics** (Sears and Zemansky's), H.D. Young and R.A. Freedman, 11th Edition, Addison—Wesley (2004).
- 6 **Problems in Elementary Physics**, B. Bukhovtsa, V. Krivchenkov, G. Myakishev and V. Shalnov, MIR Publishers, (1971).
- 7 **Lectures on Physics** (3 volumes), R.P. Feynman, Addison – Wesley (1965).
- 8 **Berkeley Physics Course** (5 volumes) McGraw Hill (1965).
 - a. Vol. 1 – Mechanics: (Kittel, Knight and Ruderman)
 - b. Vol. 2 – Electricity and Magnetism (E.M. Purcell)
 - c. Vol. 3 – Waves and Oscillations (Frank S. Crawford)
 - d. Vol. 4 – Quantum Physics (Wichmann)
 - e. Vol. 5 – Statistical Physics (F. Reif)
- 9 **Fundamental University Physics**, M. Alonso and E. J. Finn, Addison – Wesley (1967).
- 10 **College Physics**, R.L. Weber, K.V. Manning, M.W. White and G.A. Weygand, Tata McGraw Hill (1977).
- 11 **Physics: Foundations and Frontiers**, G. Gamow and J.M. Cleveland, Tata McGraw Hill (1978).
- 12 **Physics for the Inquiring Mind**, E.M. Rogers, Princeton University Press (1960).
- 13 **PSSC Physics Course**, DC Heath and Co. (1965) Indian Edition, NCERT (1967).
- 14 **Physics Advanced Level**, Jim Breithaupt, Stanley Thornes Publishers (2000).
- 15 **Physics**, Patrick Fullick, Heinemann (2000).
- 16 **Conceptual Physics**, Paul G. Hewitt, Addison—Wesley (1998).
- 17 **College Physics**, Raymond A. Serway and Jerry S. Faughn, Harcourt Brace and Co. (1999).
- 18 **University Physics**, Harris Benson, John Wiley (1996).
- 19 **University Physics**, William P. Crummet and Arthur B. Western, Wm.C. Brown (1994).
- 20 **General Physics**, Morton M. Sternheim and Joseph W. Kane, John Wiley (1988).
- 21 **Physics**, Hans C. Ohanian, W.W. Norton (1989).

Bibliography

- 22 **Advanced Physics**, Keith Gibbs, Cambridge University Press (1996).
- 23 **Understanding Basic Mechanics**, F. Reif, John Wiley (1995).
- 24 **College Physics**, Jerry D. Wilson and Anthony J. Buffa, Prentice Hall (1997).
- 25 **Senior Physics, Part – I**, I.K. Kikoin and A.K. Kikoin, MIR Publishers (1987).
- 26 **Senior Physics, Part – II**, B. Bekhtsev, MIR Publishers (1988).
- 27 **Understanding Physics**, K. Cummings, Patrick J. Cooney, Priscilla W. Laws and Edward F. Redish, John Wiley (2005).
- 28 **Essentials of Physics**, John D. Cutnell and Kenneth W. Johnson, John Wiley (2005).

GENERAL BOOKS

For instructive and entertaining general reading on science, you may like to read some of the following books. Remember however, that many of these books are written at a level far beyond the level of the present book.

- 1 **Mr. Tompkins** in paperback, G. Gamow, Cambridge University Press (1967).
- 2 **The Universe and Dr. Einstein**, C. Barnett, Time Inc. New York (1962).
- 3 **Thirty years that Shook Physics**, G. Gamow, Double Day, New York (1966).
- 4 **Surely You're Joking, Mr. Feynman**, R.P. Feynman, Bantam books (1986).
- 5 **One, Two, Three... Infinity**, G. Gamow, Viking Inc. (1961).
- 6 **The Meaning of Relativity**, A. Einstein, (Indian Edition) Oxford and IBH Pub. Co. (1965).
- 7 **Atomic Theory and the Description of Nature**, Niels Bohr, Cambridge (1934).
- 8 **The Physical Principles of Quantum Theory**, W. Heisenberg, University of Chicago Press (1930).
- 9 **The Physics—Astronomy Frontier**, F. Hoyle and J.V. Narlikar, W.H. Freeman (1980).
- 10 **The Flying Circus of Physics with Answer**, J. Walker, John Wiley and Sons (1977).
- 11 **Physics for Everyone** (series), L.D. Landau and A.I. Kitaigorodski, MIR Publisher (1978).
Book 1: Physical Bodies
Book 2: Molecules
Book 3: Electrons
Book 4: Photons and Nuclei.
- 12 **Physics can be Fun**, Y. Perelman, MIR Publishers (1986).
- 13 **Power of Ten**, Philip Morrison and Eames, W.H. Freeman (1985).
- 14 **Physics in your Kitchen Lab.**, I.K. Kikoin, MIR Publishers (1985).
- 15 **How Things Work: The Physics of Everyday Life**, Louis A. Bloomfield, John Wiley (2005).
- 16 **Physics Matters: An Introduction to Conceptual Physics**, James Trefil and Robert M. Hazen, John Wiley (2004).

INDEX

Absorption spectra	421	Biot-Savart law	143
AC current	233	Bohr magneton	163
AC Generator	224	Bohr radius	425
AC voltage	233	Bohr's model of atom	422
applied to a capacitor	241	Bohr's postulates	424
applied to a resistor	234	Brewster's angle	380
applied to an inductor	237	Brewster's law	381
applied to a series LCR circuit	244	C.A. Volta	53
Accelerators in India	142	Capacitance	73
Activity of radioactive substances	447	Capacitive reactance	241
Additivity of charges	8	Capacitive circuit	252
Alpha decay	449	Capacitor	
Alpha particle scattering	415	parallel plate	74
Ammeter	165	in parallel	79
Ampere	155	in series	78
Amperes circutal law	147	Cartesian sign convention	311
Analog signal	491	Cassegrain telescope	341
AND gate	492	Cells	110
Andre, Ampere	492	in parallel	114
Angle	148	in series	113
of deviation	330	Chain reaction	453
of incidence	355	Charging by induction	6
of reflection	357	Charles August de Coulomb	11
of refraction	355	Chromatic aberration	332
Angular magnification	339	Coercivity	195
Apparent depth	318	Coherent source	360
Area element vector	26	Colour code of resistors	103
Atomic		Combination of lenses	328
mass unit	439	Combination of resistors	
number	440	series	107
spectra	420	parallel	108
Aurora Borealis	139	Composition of nucleus	438
Band gap	471	Concave mirror	312
Bar magnet	174	Conduction band	469
as solenoid	176	Conductivity	97, 468
Barrier potential	479	Conductors	5
Becquerel	448	Conservation of charge	8
Beta decay	450	Conservative force	51
Binding energy per nucleon	444	Continuous charge distribution	32

Index

Control rods	454	susceptibility	72
Convex mirror	312	Electrical energy	105
Coulomb	11	Electromagnetic	
Coulomb's law	10	waves, sources	274
Critical angle	320	waves, nature	275
Curie temperature	194	damping	218
Curie	448	spectrum	280
Current	94	Electron emission	387
density	97	Electrostatic	
loop as a magnetic dipole	160	analog	180
sensitivity of galvanometer	165	potential	53
Cut-off voltage/Stopping potential	391	shielding	69
Cyclotron	140	Electrostatics	1
frequency	141	of conductors	67
Davisson & Germer Experiment	403	Electromotive force (emf)	110
de Broglie		Emission spectra	421
relation	398	Energy	
wavelength	398	bands	469
explanation	430	generation in stars	455
Decay constant	446	levels	427
Diamagnetism	192	stored in a capacitor	80
Dielectrics	71	Equipotential surfaces	60
Dielectric		Excited state	427
constant	76	Experiments of Faraday & Henry	205
strength	74	Extrinsic semiconductor	474
Diffraction	367	Farad	74
single slit	368	Faraday's law of Induction	207
Digital		Fast breeder reactor	453
electronics	491	Ferromagnetism	193
signal	491	Field	
Dioptrē	328	due to infinite plane sheet	38
Dipole		due to uniformly charged thin spherical shell	39
moment	28	Field emission	388
moment vector	28	Flux leakage	261
in uniform electric field	31	Focal length	311
physical significance	29	Force between two parallel currents	154
Displacement current	270	Forward bias	479
Doppler effect	358	Franck-Hertz experiment	428
Drift velocity	98	Fringe width	364
Earth's magnetism	185	Full-wave rectifier	483
Earthing	5	G.S. Ohm	95
Eddy currents	218	Gamma	
Einstein's photoelectric equation	394	rays	283
Electric		decay	451
charge	1	Gauss's law	33
current	93	its applications	37
dipole	27	in magnetism	181
displacement	77	Gaussian surface	35
field	18	Geographic meridian	186
field, physical significance	20	Gold leaf electroscope	4
field due to a system of charges	19	Ground state	427
field lines	23	H.A. Lorentz	134
flux	25		

Physics

Half life	448	field on the axis of a circular current loop	145
Half-wave rectifier	483	flux	182, 206
Hallwachs' and Lenard's observations	388	force on a current carrying conductor	135
Henry	220	force	133
Hertz Experiment	274	hysteresis	195
Holes	472	inclination	187
Horizontal component of earth's magnetic field	187	intensity	190
Huygen's Principle	353	meridian	186
Impact parameter	418	moment of a current loop	158
Impedence diagram	246	moment	178
Inductance	219	permeability	190
mutual	220	potential energy	178
self	222	susceptibility	190
Induction	6	torque	178
of charge	6	Magnetisation	189
Inductive		Majority carriers	476
circuit	252	Mass	
reactance	238	defect	443
Insulators	5	number	440
Interference		energy relation	442
constructive	361	Maxwell's equations	273
destructive	361	Mean life	448
fringes	363	Meter bridge	120
Internal resistance	110	Michael Faraday	208
Intrinsic semiconductor	472	Microscope	335
Ionisation energy	427	compound	337
Isobars	441	Microwaves	281
Isotones	441	Minority carriers	476
Isotopes	439	Mirage	321
J.C. Maxwell	270	Mirror equation	314
K.F. Gauss	182	Mobility	100
Kirchhoff's rules	115	Moderator	454
Lateral shift	317	Motion in a magnetic field	137
Law		Motional emf	212
of radioactive decay	447	Moving coil galvanometer	163
of reflection	357	Multiplication factor (fission)	454
of refraction	356	NAND gate	504
LC oscillations	255	Neutrons	440
Lenz's law	210	Non-polar molecules	72
Lens maker's formula	326	NOR gate	505
Light emitting diode	488	North pole	174
Limitations of Ohm's law	101	NOT gate	491
Linear		n-type semi conductor	475
charge density	32	Nuclear	
magnification/Magnifying power	336	binding energy	442
Logic gates	491	density	442
Lorentz force	134	energy	451
Magnetic		fission	452
declination	186	force	445
dipole	177	fusion	455
dipole moment of a revolving electron	162	holocaust	457
field	132	reactor	452
field lines	175	size	441
		winter	457

Index

Numerical aperture	375	Radio waves	281
Ohm	95	Radioactivity	446
Ohm's law	95	Rainbow	333
Optical fibres	321	Ray optics, validity of	375
OR gate	491	Rayleigh scattering	334
Orbital magnetic moment	163	Rectifier	483
Paramagnetism	192	Red shift	358
Permanent magnets	195	Reflection of light	310
Permeability of free space	143	Refraction	318
Permittivity		of a plane wave	355
of free space	11, 76	Refractive index	317, 356
of medium	76	Relation between field and potential	61
Phasors	237	Relaxation time	98
diagram	237	Rententivity	195
Photodiode	487	Resistance	95
Photoelectric effect	388	Resistivity	96, 468
Photocell	399	of some materials	102
Photoelectric emission	388	Resolving power	373
Photoelectrons	389	of eye	374
Photon	395	Resonance	248
Pith ball	2	Sharpness	249
Plane polarised wave	377	Resonant frequency	248
p-n-p junction	478	Reverse bias	480
Point charge	10	Right hand rule	149
Polar molecules	72	Root mean square (rms) or effective	
Polarisation	71, 376	current	235
by reflection	380	voltage	236
by scattering	379	Roget's spiral	156
Polarity of charge	2	Rutherford's model of atom	415
Polaroid	378	Saturation current	390
Potential	53	Scattering of light	334
due to an electric dipole	55	Secondary wavelet	354
due to a point charge	54	Semiconductors	469
due to a system of charges	57	diode	479
energy difference	53	elemental	468
energy for a system of charges	61	compound	468
energy of a dipole	66	Shunt resistance	164
energy of a single charge	64	Snell's law	317, 356
energy of a system of two charges	65	Solar cell	489
energy	52	Solenoid	151
Potentiometer	122	South pole	174
Power (electrical)	106	Spectral series	421
factor	252	Brackett	422
in ac circuit	252	Fund	422
of lens	327	Lyman	422
Pressurised heavy water reactors	453	Paschen	422
Primary coil		Spherical mirror	310, 311
Principal focus	311	Spin magnetic moment	163
Principle of superposition	15	Surface charge density	32
Principle quantum number	425	Telescope	339
Properties of electric charge	8	Temperature dependence of	
p-type semi conductor	476	resistivity	103
Q factor/quality factor	250	Tesla	135
Quanta of energy	393	Thermionic emission	388
Quantisation of charge	8		

■ Physics

Thermonuclear fusion	456	Velocity selector	140
Thin lens formula	326	Visible rays	282
Threshold frequency	392	Voltage Regulator	486
Tokamak	153	Voltage sensitivity of a galvanometer	165
Toroid	152	Voltmeter	165
Torque		Volume charge density	32
on a current loop	157	Wattless current	252
on a dipole	31	Wavefront	353
Total internal reflection	319	plane	354
Transformer	259	spherical	354
Step-down	261	Wheatstone bridge	118
Step-up	261	Work function	394
Truth table	491	X rays	283
Uncertainty Principle	400	Young's experiment	362
Unpolarised wave	377	Zener	
Ultraviolet rays	282	diode	485
Valence band	469	breakdown	485