7408

Physics

This book is curently a *preliminary draft*.

It is probably full of errors, lies, paradoxes and communist propaganda.

 $Send\ corections\ to\ \texttt{https://github.com/aDotInTheVoid/a-level-notes}.$

Copyright © 2019 Nixon Enraght-Moony

HTTPS://GITHUB.COM/ADOTINTHEVOID/A-LEVEL-NOTES

Licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (the "License"). You may not use this file except in compliance with the License. You may obtain a copy of the License at https://creativecommons.org/licenses/by-nc-sa/4.0/. Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Compiled August 25, 2020

Contents

	Measurements and their errors	5
1	Use of SI units and their prefixes	6
2	Limitation of physical measurements	7
3	Estimation of physical quantities	8
II	Particles and radiation	9
4	Particles	10
	4.1 Constituents of the atom	10 10 10 10 10 10
5	Electromagnetic radiation and quantum phenom	11
	5.1 The photoelect effect	11 11 11 11
Ш	l Waves	12
6	Progressive and stationary waves 6.1 Progressive waves	13 13 13
7	Refraction, diffraction and interference 7.1 Interference	14 14 14 14
IV	Mechanics and materials	15
8	Force, energy and momentum 8.1 Scalars and vectors	16 16

Phy	sics,	, by Nixon Enraght-Moony	Contents
9	9.1	Motion along a straight line Projectile motion Newton's laws of motion Momentum Work, energy and power Conservation of energy terials Bulk properties of solids	16 16 16 16 16 17
V	9.2	The Young modulus	18
10	10.1 10.2 10.3 10.4 10.5	Prent electricity Basics of electricity Current-voltage characteristics Resistivity Circuits Potential divider Electromotive force and internal resistance	19 19 19
VI		Further mechanics and thermal physics	20
VI		Fields and their consequences	21
VI	II I	Nuclear physics	22
IX	,	Astrophysics	23
X		Medical physics	24
ΧI		Engineering physics	25
ΧI	Ι.	Turning points in physics	26
ΧI		Electronics	27

Measurements and their errors

1	Use of SI units and their prefixes	6
2	Limitation of physical measurements	7
3	Estimation of physical quantities	9

1 Use of SI units and their prefixes

2 Limitation of physical measurements

3 Estimation of physical quantities



Particles and radiation

4	Par	ticles	10
	4.1	Constituents of the atom	10
	4.2	Stable and unstable nuclei	10
	4.3	Particles, antiparticles and photons	10
	4.4	Particle interactions	10
	4.5	Classification of particles	10
	4.6	Quarks and antiquarks	10
	4.7	Applications of conservation law	10
5	Elec	ctromagnetic radiation and quantum phenom	11
	5.1	The photoelect effect	11
	5.2	Collisions of electrons with atoms	11
	5.3	Energy levels and photon emission	11
	5.4	Wave-particle duality	11

4 Particles

- §4.1 Constituents of the atom
- §4.2 Stable and unstable nuclei
- §4.3 Particles, antiparticles and photons
- §4.4 Particle interactions
- §4.5 Classification of particles
- §4.6 Quarks and antiquarks
- §4.7 Applications of conservation law

5 Electromagnetic radiation and quantum phenom

- §5.1 The photoelect effect
- §5.2 Collisions of electrons with atoms
- §5.3 Energy levels and photon emission
- §5.4 Wave-particle duality



Waves

6	Progressive and stationary waves	1.9
Ū	6.1 Progressive waves	
	6.2 Longitudinal and transverse waves	. 13
	6.3 Principle of superposition of waves and formation of stationary waves	. 13
7	Refraction, diffraction and interference	14
	7.1 Interference	. 14
	7.2 Diffraction	. 14
	7.3 Refraction at a plane surface	. 14

6 Progressive and stationary waves

- §6.1 Progressive waves
- §6.2 Longitudinal and transverse waves
- §6.3 Principle of superposition of waves and formation of stationary waves

Refraction, diffraction and interference

- §7.1 Interference
- §7.2 Diffraction
- §7.3 Refraction at a plane surface

IV

Mechanics and materials

8		ce, energy and momentum	16
	8.1	Scalars and vectors	16
	8.2	Moments	16
	8.3	Motion along a straight line	16
	8.4	Projectile motion	16
	8.5	Newton's laws of motion	16
	8.6	Momentum	16
	8.7	Work, energy and power	16
	8.8	Conservation of energy	16
9	Mat	erials	17
	9.1	Bulk properties of solids	17
	9.2	The Young modulus	17

8 Force, energy and momentum

- §8.1 Scalars and vectors
- §8.2 Moments
- §8.3 Motion along a straight line
- §8.4 Projectile motion
- §8.5 Newton's laws of motion
- §8.6 Momentum
- §8.7 Work, energy and power
- §8.8 Conservation of energy

9 Materials

- §9.1 Bulk properties of solids
- §9.2 The Young modulus

\mathbf{V}

Electricity

0 Cur	rent electricity
10.1	Basics of electricity
10.2	2 Current–voltage characteristics
10.3	Resistivity
10.4	4 Circuits
10.5	5 Potential divider
10.6	S Electromotive force and internal resistance

10 Current electricity

- §10.1 Basics of electricity
- §10.2 Current–voltage characteristics
- §10.3 Resistivity
- §10.4 Circuits
- §10.5 Potential divider
- §10.6 Electromotive force and internal resistance

VI

Further mechanics and thermal physics

VII

Fields and their consequences

VIII

Nuclear physics

IX Astrophysics

X Medical physics

XI

Engineering physics

XII

Turning points in physics



Electronics