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Physics (9-1) Specification

Specification Summary

Section 1: Energy

- 1.1 Energy change in a system**
- 1.2 Conservation and dissipation of energy**
- 1.3 Efficiency**
- 1.4 National and global energy resources**

Section 2: Electricity

- 2.1 Current, potential difference and resistance**
- 2.3 Domestic uses and safety**
- 2.4 Energy transfers**
- 2.5 Static electricity**

Section 3: Particle model of matter

- 3.1 Changes of state and the particle model**
- 3.2 Internal energy and energy transfers**

Section 4: Atomic structure

4.1 Atoms and isotopes

4.2 Atoms and nuclear radiation

4.3 Hazards + uses of emissions; background radiation

4.4 Nuclear fission and fusion

Section 5: Forces

5.1 Forces and their interactions

- Scalar and vector quantities

- Gravity

- Resultant forces

5.2 Work done and energy transfer

5.3 Forces and elasticity

5.4 Moments; levers and gears

5.5 Pressure in fluids

5.6 Forces and motion

5.6.1 Describing motion along a line

Distance and displacement

Speed

Velocity

The distance-time relationship

Acceleration

5.6.2 Forces; accelerations; Newton's Laws of motion

Newton's First Law

Newton's Second Law

Newton's Third Law

5.6.3 Forces and braking

5.7 Momentum

Section 6: Waves

6.1 Waves in air; fluids; solids

6.2 Electromagnetic waves

6.3 Black body radiation

Section 7: Magnetism and electromagnetism

7.1 Permanent and induced magnetism

7.2 The motor effect

7.3 Induced potential; transformers; Nat Grid

Section 8: Space physics

8.1 Solar system; stability of orbital motions; satellites

8.2 Red shift



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Chemistry (9-1) Specification

Specification Summary

Section 1: Atomic Structure & the Periodic Table

- 1.1 Simple Model, Charge, RAM, Isotopes**
- 1.2 The Periodic Table**
- 1.3 Properties of Transition Metals**
- 1.4 Reaction of elements**
- 1.5 Mixtures**

Section 2: Bonding structure

- 2.1 Chemical bonds, Ionic, Covalent, Metallic**
- 2.2 How bond + structure relate to props**
- 2.3 Structure + bonding carbon**
- 2.4 Bulk + surface properties including nanoparticles**

Section 3: Quantitative chemistry

- 3.1 Chemical measure, conservation of mass + quant interp. chem.**
- 3.2 Use of amount of sub, masses pure subs**
- 3.3 Yield + atom economy of chemical reactions**
- 3.4 Using conc. of solution in mol/dm³**
- 3.5 Relative mass and moles**

Section 4: Chemical changes

4.1 Reactivity of metals

4.2 Reactions of acids

4.3 Electrolysis

4.4 Making Salts

Section 5: Energy changes

5.1 Exothermic and endothermic reactions

5.2 Chemical cells and fuel cells

Section 6: Rate + extent chemical change

6.1 Rate of reaction

6.2 Reversible reactions and dynamic equilibrium

Section 7: Organic chemistry

7.1 Crude oil and Alkanes

7.2 Reactions of Alkenes and alcohols

7.3 Synthetic and naturally occurring polymers

7.4 Cracking and alkenes

7.5 Alcohol, Carboxylic acids and Esters

7.6 Polymers

7.8 Biochemistry

Section 8: Chemical analysis

8.1 Purity formulations + chromatography

8.2 Identification of common gases

8.3 Identification ions by chemical and spectroscopic means

Section 9: Chemistry of the atmosphere

9.1 Composition & evolution of the Earth's atmosphere

9.2 Common atmospheric pollutants and their sources

9.3 Green house gases

Section 10: Using resources

10.1 Using Earth's resources, pot & water

10.2 Life cycle assessment + recycling

10.3 Metals and using other materials

10.4 Haber process

10.5 Use and making Fertilizer (NPK)

Section 11: Formulae and Equations

11.1 Writing Chemical formulae

11.2 Classifying substances

11.3 Common reactions

11.4 Balancing equations

11.5 Ionic equations

11.6 Half equations



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Biology (9-1) Specification

Specification Summary

Section 1: Cell biology

Cell Structure

Cell Division

Transport in Cells

Section 2: Organisation

Animal tissues, Organs and Organ Systems

Plant tissues, Organs and Systems

Section 3: Infection and Response

Infection and response

Monoclonal antibodies

Communicable diseases

Plant disease

Section 4: Bioenergetics

Photosynthesis

Respiration

Section 5: Homeostasis and response

Homeostasis

The human nervous system

Hormonal coordination in humans

Plant hormones

Section 6: Inheritance, variation and evolution

Reproduction

Variation and evolution

Development of understanding genetics + evolution

Classification of living organisms

Section 7: Ecology

Adaptations, interdependence and competition

Organisation of an ecosystem

Biodiversity & the effect of human interaction on ecosystems

Trophic levels in an ecosystem

Food production

www.scienceclinic.co.uk
www.private-tuition.org