

# P1 - Energy

## P1 - Energy

P2 - Electricity

P3 - Particle model of matter

P4 - Atomic Structure

P5 - Forces

P6 - Waves

P7 - Magnetism and Electromagnetism

P8 - Space

Energy changes  
in a system

Energy stores and systems

Calculate changes in energy  
and of systems

Power

Conservation  
of energy

Energy transfers in a system

Efficiency

National and global  
energy resources

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# P2 - Electricity

## P2 - Electricity

P1 - Energy

Current, potential difference and resistance

Circuit diagram symbols  
Electrical charge and current  
 $V=IR$

Resistors (lamps, diodes, thermistors and LDRs)

P3 - Particle model of matter

Series and parallel circuits

Calculate current and resistance

P4 - Atomic Structure

Domestic uses and safety

AC and DC

P5 - Forces

Mains electricity

P6 - Waves

Energy transfers

Power  $P=VI$ ,  $P = I^2R$   
Energy transfers in everyday appliances  $E=Pt$   $E = QV$

P7 - Magnetism and Electromagnetism

The National Grid

P8 - Space

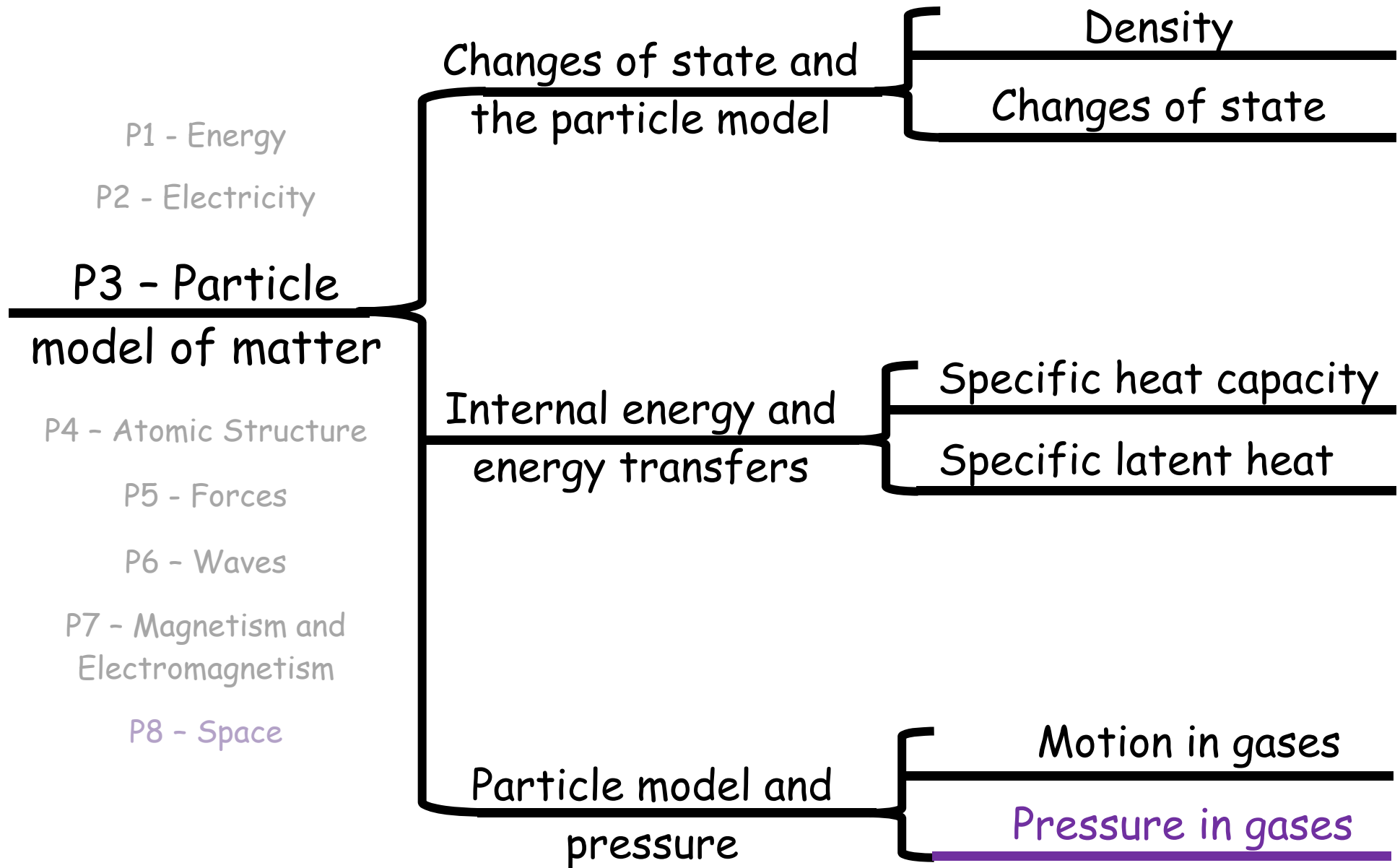
Static electricity

Static charge

Electric fields

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# P3 - Particle model of matter



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# P4 - Atomic Structure

P1 - Energy

P2 - Electricity

P3 - Particle model of matter

## P4 - Atomic Structure

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### Atoms and isotopes

The structure of an atom  
Mass number, atomic number and isotopes

The development of the model of the atom

### Atoms and nuclear radiation

Radioactive decay

Nuclear radiation and equations  
Half-lives and the random nature of radioactive decay  
Radioactive contamination

### Hazards and uses of radioactive emissions and background radiation

Background radiation

Half-lives of radioactive isotopes

Uses of nuclear radiation

### Nuclear fission and fusion

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# P5 - Forces

Forces and their interactions

Scalar and vector quantities

Contact and non-contact forces

Gravity

Resultant forces

Work done and energy transfer

Forces and elasticity

Moments, levers and gears

Pressure differences in fluids

Pressure in a fluid

Atmospheric pressure

Forces and motion

Describing motion along a line

Forces, accelerations and Newton's Laws of motion

Forces and braking

Momentum

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P6 - Waves

P7 - Magnetism and Electromagnetism

P8 - Space

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# P6 - Waves

P1 - Energy

P2 - Electricity

P3 - Particle model of matter

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P5 - Forces

**P6 - Waves**

P7 - Magnetism and Electromagnetism

P8 - Space

Waves in air, fluids and solids

Electromagnetic waves

Black body radiation

Transverse and longitudinal waves

Properties of waves

Reflection of waves

Sound waves

Waves for detection and exploration

Types and properties

Uses and applications

Lenses

Visible light

Emission and absorption of infrared radiation

Perfect black bodies and radiation

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# P7 - Magnetism and Electromagnetism

P1 - Energy

P2 - Electricity

P3 - Particle model of matter

P4 - Atomic Structure

P5 - Forces

P6 - Waves

## P7 - Magnetism and Electromagnetism

P8 - Space

Permanent and induced magnetism, magnetic forces and fields

Poles of a magnet  
Magnetic fields

The motor effect

Electromagnetism

Fleming's left-hand rule

Electric motors

Loudspeakers

Induced potential, transformers and the National Grid

Induced potential

The generator effect

Microphones and transformers

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# P7 - Magnetism and Electromagnetism

P1 - Energy

P2 - Electricity

P3 - Particle model of matter

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P5 - Forces

P6 - Waves

P7 - Magnetism and Electromagnetism

**P8 - Space**

The solar system

Our solar system

The life cycle of a star

Orbital motion, natural and artificial satellites

Red-shift

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