

A Level Chemistry KS5: Year 12



CARDINAL
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Physical 3.1.9 Rate equations

Rate equations and the rate constant, the Arrhenius equation, determination of rate of reaction from experiment, order of reaction, rate determining step (RDS).

Organic 3.3.5 Alcohols

Primary, secondary, tertiary, oxidation, elimination

3.3.6 Analysis

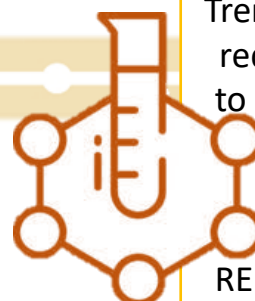
Test-tube reactions, mass spectroscopy, infrared spectroscopy.



Term
3:2

Inorganic 3.2.3 Group 7

Trends, relative oxidising abilities of the halogens and reducing ability of the halide ions, silver nitrate test to identify halide ions in solution, uses of chlorine & chlorate.



Term
3:1

Physical 3.1.7 REDOX

REDOX & electron gain & loss, oxidation states, half-equations.

Term
2:2

Inorganic 3.2.1 Periodicity

Trends; atomic radius, 1st ionisation energy.

3.2.2 Group 2 elements

Trends, reaction with water, relative solubilities of Gp2 hydroxides & sulfates, uses of Gp2 compounds, BaCl₂ solⁿ test for sulfates.

Physical 3.1.5 Kinetics

Collision theory, Maxwell-Boltzmann distribution, effect of temperature on rate.

3.1.6 Equilibria

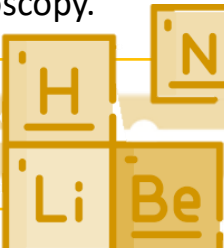
Le Chatelier's principle, the equilibrium constant, K

Organic 3.3.3 Halogenoalkanes

Nucleophilic substitution, elimination, depletion of the ozone.

3.3.4 Alkenes

Structure, nomenclature & reactivity, addition reaction, polymers



Organic 3.3.1 Introduction to Organic Chemistry

Nomenclature, isomerism.

3.3.2 Alkanes

Fractional distillation, cracking, combustion, chlorination (free-radical substitution).

Physical 3.1.4 Energetics

Enthalpy changes, calorimetry, Hess's law, bond enthalpies

Term
2:1

Term
1.2



Transition from GCSE

Physical 3.1 Atomic structure

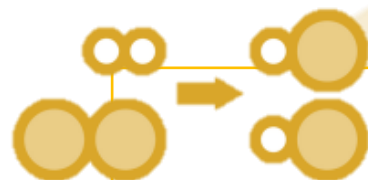
Fundamental particles, mass number & isotopes, electronic configuration

Physical 3.1.2 Amount of Substance

Relative atomic & molecular mass, the Mole & Avogadro's number, Ideal gas equation, empirical & molecular formula, balanced equation, reacting masses

Physical 3.1.3 Bonding

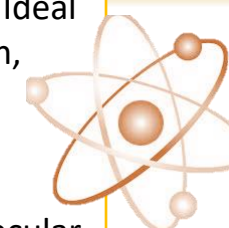
Ionic, covalent & dative covalent, metallic, physical properties, molecular & ionic shapes, bond polarity, inter-molecular forces



START

Term
1.1

OUR LEARNING
JOURNEY



A Level Chemistry KS5: Year 13



Examinations

Organic 3.3.15 NMR spectroscopy

¹³C and ¹H NMR spectroscopy.

3.3.16 Chromatography

As a method of separating and identifying components in a mixture, TLC

Revision and Review

Term
3:2

Organic 3.3.13 Amino acids & DNA

Acidic & basic properties, zwitterions, protein structure, enzymes, DNA, action of anti-cancer drugs.

3.3.14 Synthesis

Steps involved in synthesis of organic

Inorganic 3.2.5 Transition metals

General properties, substitution reactions, shapes of complex ions, coloured ions, variable oxidation states, catalysis.

3.2.6 Reactions of aqueous ions

Reactions of Fe, Cu, Al ions in solution.

Term
3:1

Physical 3.1.1 Electrochemical cells

Electrode potentials, simple cells, EMF, commercial applications

Organic 3.3.11 Amines

Preparation, base properties, as nucleophiles

3.3.12 Polymerisation

Condensation polymers, biodegradability

Inorganic 3.2.4 Periodicity

Properties of Period 3 elements & their oxides.

Term
2:2

Physical 3.1.12 Acids & Bases

Bronsted-Lowry definition, pH, K_w , weak acids, titration curves & indicators, buffer Solutions.

Organic 3.3.9 Carboxylic acid derivatives.

Esters, lipids, acylation, acyl chlorides, acid anhydrides, amides, nucleophilic addition-elimination.

3.3.10 Aromatic

Structure, electrophilic substitution, nitration, Friedel-Crafts acyl

Term
2:1

Term
1:2

Physical 3.1.10 Equilibrium constant, K_p

Mole fraction, partial pressures, calculating K_p

3.1.8 Thermodynamics

Enthalpy changes, the Born-Haber cycle, entropy and Gibb's free energy change.

Organic 3.3.7 Optical isomerism

Ionic, covalent & dative covalent, metallic, physical properties, molecular & ionic shapes, bond polarity, inter-molecular forces

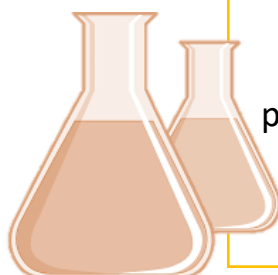
3.3.8 Aldehydes & ketones

Chemical tests, reduction, nucleophilic addition

START

Term
1.1

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A Level Chemistry



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Organic
3.3.15 NMR spectroscopy
3.3.16 Chromatography

Revision and Review

Examinations



**Year 13
Term 3**

Physical
3.1.1 Electrochemical cells

Organic
3.3.11 Amines
3.3.12 Polymerisation
3.3.13 Amino acids & DNA
3.3.14 Synthesis

Inorganic
3.2.4 Periodicity
3.2.5 Transition metals
3.2.6 Reactions of aqueous ions

**Year 13
Term 2**

Physical
3.1.10 Equilibrium constant, K_p
3.1.8 Thermodynamics
3.1.12 Acids & Bases

Organic
3.3.7 Optical isomerism
3.3.8 Aldehydes & ketones
3.3.9 Carboxylic acid derivatives
3.3.10 Aromatic

**Year 13
Term 1**

Organic
3.3.5 Alcohols
3.3.6 Analysis

Physical
3.1.9 Rate equations

**Year 12
Term 3**

Inorganic
3.2.1 Periodicity
3.2.2 Group 2 elements
3.2.3 Group 7

Physical
3.1.5 Kinetics
3.1.6 Equilibria
3.1.7 REDOX

Organic
3.3.3 Halogenoalkanes
3.3.4 Alkenes

**Year 12
Term 2**

Transition from GCSE

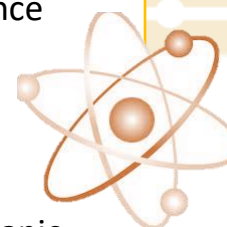
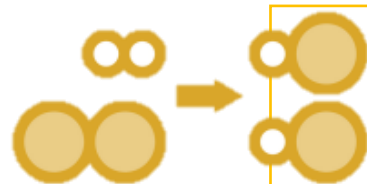
Physical
3.1 Atomic structure
3.1.2 Amount of Substance
3.1.3 Bonding
3.1.4 Energetics

Organic
3.3.1 Introduction to Organic
Chemistry
3.3.2 Alkanes

**Year 12
Term 1**



**OUR LEARNING
JOURNEY**



A Level Chemistry KS5: Year 12 (Paper 1)



Inorganic 3.2.6 Reactions of inorganic compounds in aqueous solutions.

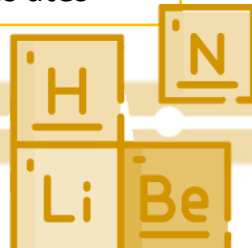
The acid-base chemistry of aqueous transition metal ions, ligand substitution.

Physical 3.1.12 Acids, bases and buffers

PH scale, weak acids and bases, acid-base titrations, buffer solutions

Inorganic 3.2.5 Transition metals

General properties, complex formation, colour ions, variable oxidation states



Term
3:1



Term
3:2

Physical 3.1.8 Thermodynamics

Enthalpy changes, the Born-Haber cycle, entropy and Gibb's free energy change.

Physical 3.1.10 Equilibrium constant, K_p

For homogenous systems

Physical 3.1.11 Electrode potential and electrochemical cells

Electrochemical cells, redox reactions, electrochemical cells

Inorganic 3.2.2 Group 2 elements

Trends, reaction with water, relative solubilities of Gp2 hydroxides & sulfates, uses of Gp2 compounds, BaCl₂ sol. test for sulfates.

Inorganic 3.2.3 Group 7

Trends, relative oxidising abilities of the halogens and reducing ability of the halide ions, silver nitrate test to identify halide ions in solution, uses of chlorine & chlorate.

Inorganic 3.2.4 Period 3

Reactions of Period 3 elements, oxides of elements in Period 3, acidic/basic nature of the Period 3 oxides

Term
2:2

Term
2:1

Physical 3.1.4 Energetics

Enthalpy changes, calorimetry, Hess's law, bond enthalpies

Physical 3.1.6 Equilibria

Le Chatelier's principle, the equilibrium constant, K_c

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