CHEMISTRY
SCIENCE DEPARTMENT

KS5: YEAR 12

OUR LEARNING JOURNEY

SUMMER 3:2

Inorganic 3.2.6 Reactions of inorganic compounds in aqueous solutions.
The acid-base chemistry of aqueous transition metal ions, ligand substitution.

SUMMER 3:1

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 oxidations rates

Physical 3.1.8 Thermodynamics
Enthalpy changes, the Born-Haber cycle, entropy and Gibb's free energy change.
Physical 3.1.10 Equilibrium constant, Kp
For homogenous systems
Physical 3.1.11 Electrode potential and electrochemical cells
Electrochemical cells, redox reactions, electrochemical cells

SPRING 2:2

Inorganic 3.2.2 Group 2 elements
Trends, reaction with water, relative solubilities of Gp2 hydroxides & sulfates, uses of Gp2 compounds, $BaCl_2$ sol^n 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

SPRING 2:1

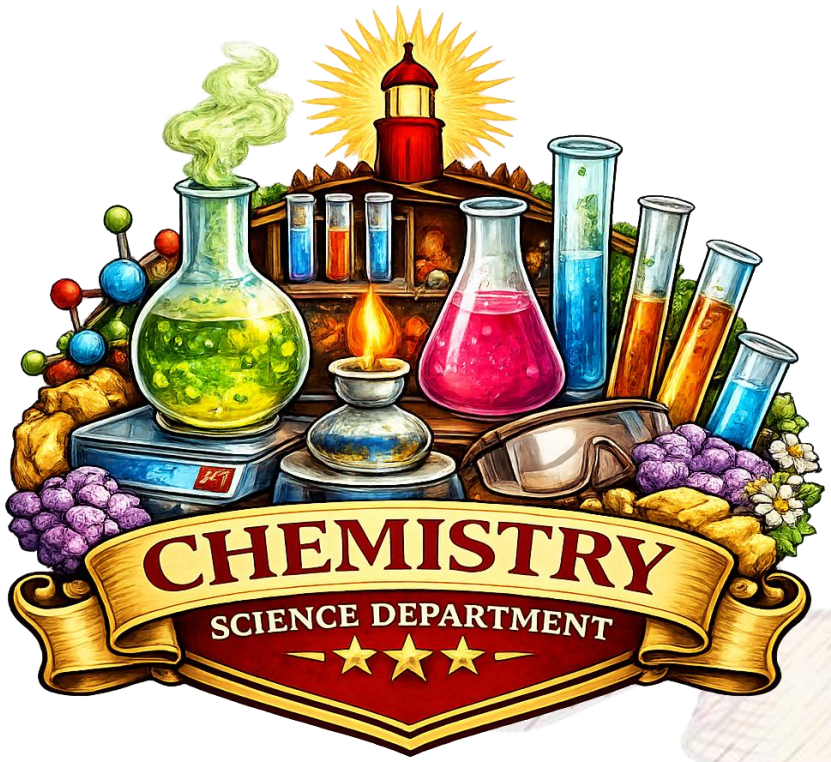
Physical 3.1.4 Energetics
Enthalpy changes, calorimetry, Hess's law, bond enthalpies
Physical 3.1.6 Equilibria
Le Chatelier's principle, the equilibrium constant, Kc
Physical 3.1.7 REDOX
REDOX & electron gain & loss, oxidation states, half-equations.
Inorganic 3.2.1 Periodicity
Trends; atomic radius, 1st ionisation energy.

AUTUMN 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

AUTUMN 1:1

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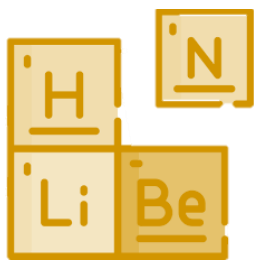
KS5: YEAR 13



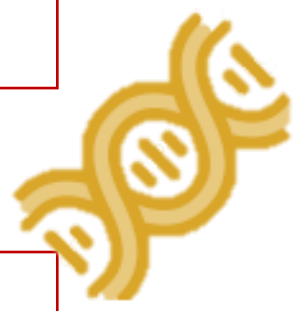


Examinations

Revision and Review

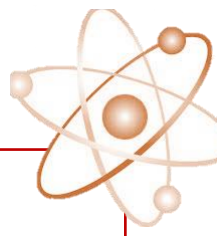


Organic 3.3.9 Carboxylic acid derivatives.
Esters, lipids, acylation, acyl chlorides, acid anhydrides, amides, nucleophilic addition-elimination.
Organic 3.3.13 Amino acids & DNA
Acidic & basic properties, zwitterions, protein structure, enzymes, DNA, action of anti-cancer drugs.
Organic 3.3.15 NMR spectroscopy
^{13}C and ^{1}H NMR spectroscopy.
3.3.16 Chromatography
As a method of separating and identifying components in a mixture, TLC



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3.3.14 Organic Synthesis
Steps involved in synthesis of organic compounds

Revision and Review



Physical 3.1.5 Kinetics
Collision theory, Maxwell-Boltzmann distribution, effect of temperature on rate.
Organic 3.3.1 Introduction to Organic Chemistry
Nomenclature, isomerism.
3.3.2 Alkanes
Fractional distillation, cracking, combustion, chlorination (free-radical substitution).
Organic 3.3.3 Halogenoalkanes
Nucleophilic substitution, elimination, depletion of the ozone.
3.3.4 Alkenes
Structure, nomenclature & reactivity, addition reaction, polymers
Organic 3.3.5 Alcohols
Primary, secondary, tertiary, oxidation, elimination
3.3.6 Analysis
Test-tube reactions, mass spectroscopy, infrared spectroscopy.

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 3.3.7 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
3.3.10 Aromatic
Structure, electrophilic substitution, nitration, Friedel-Crafts acyl
Organic 3.3.11 Amines
Preparation, base properties, as nucleophiles
3.3.12 Polymerisation
Condensation polymers, biodegradability

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