

SUMMER WORK - CHEMISTRY – YEAR 11 into 12

Head of Department

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Exam Board

AQA

Specification

7404/7405

COURSE DETAILS

Examination

The AS course is examined at the end of Year 12 and the A Level as a whole at end of Y13.

AS Chemistry

Physical chemistry: Atomic structure, Amount of substance, Bonding, Energetics, Kinetics, Chemical equilibria, Le Chatelier's principle and K_c , oxidation, reduction and redox equations.

Inorganic chemistry: Groups 2 the alkaline earth metals, Group 7 the halogens, periodicity.

Organic chemistry: Introduction to organic chemistry, Alkanes, Halogenoalkanes, Alkenes, Alcohols, Organic analysis.

In Year 12 students complete 6 Required Practicals. These will be assessed in the exams.

A-level Chemistry

In addition to the above to the following topics will be studied:

Physical chemistry: Thermodynamics, Acids and Bases, Electrode potentials and electrochemical cells, Rate equations, Equilibrium constant K_p for homogeneous systems.

Inorganic chemistry: Transition metals, Reactions of ions in aqueous solution, Properties of Period 3 elements and their oxides.

Organic chemistry: Optical isomerism, Aldehydes and ketones, Carboxylic acids and derivatives, Aromatic chemistry, Amines, Polymers, Amino acids, proteins and DNA, Nuclear magnetic resonance spectroscopy, Chromatography, Organic synthesis.

In Year 13 students complete a further 6 Required Practicals. These will be assessed in the exams and provide the evidence for the Practical Endorsement.

SUMMER WORK FOR INTRODUCTION TO YEAR 12

TASK	TOPIC	
1.	Atomic structure	Research and write a short report about: The isotopes of carbon and carbon-14 dating.
2.	Bonding	Revise and create a summary table about: The three types of bonding and three types of interactions (or forces) between molecules
3.	Organic chemistry	Research and create a summary table or factsheet (to include functional groups) on: The following homogenous series or "families" of molecules: alkanes, alkenes, halogenoalkanes, alcohols, aldehydes, ketones, carboxylic acids.

ADVISED READING TO PREPARE FOR COURSE

I recommend the following books; both are available on Amazon for around £5. These will help bridge the gap between GCSE and A-Level, and boost your confidence before the course begins.

Summer Start for A-Level Chemistry: Over 250 Questions and answers Paperback – 11 Jun 2017 by Primrose Kitten (Author)

Head Start to A-level Chemistry (CGP A-Level Chemistry) Paperback – 2 Mar 2015 by CGP Books

HOW WILL I BE ASSESSED?

Exam Papers Y12	% of AS	Y12 is assessed through two papers, including at least 20% assessment of mathematical skills and 15% assessment of practical skills
Paper 1: Relevant Physical chemistry topics, Inorganic chemistry and relevant practical skills. 90 mins - 80 marks	50%	This paper is made up of: 65 marks of short and long answer questions, and 15 marks of multiple choice questions.
Paper 2: Relevant Physical chemistry topics, Organic chemistry and relevant practical skills. 90 mins – 80 marks	50%	This paper is made up of: 65 marks of short and long answer questions, and 15 marks of multiple choice questions.
Exam Papers Y13	% of A Level	Y13 is assessed through three papers, including at least 20% assessment of mathematical skills and 15% assessment of practical skills
Paper 1: Paper 1: Relevant Physical chemistry topics, Inorganic chemistry and relevant practical skills. 2 hours – 105 marks	35%	This paper is made up of: 105 marks with a mixture of short and long answer questions.
Paper 2: Relevant Physical chemistry topics, Organic chemistry and relevant practical skills. 2 hours – 105 marks	35%	This paper is made up of: 105 marks with a mixture of short and long answer questions.
Paper 3: Any content, any practical skills 2 hours – 90 marks	30%	40 marks of questions on practical techniques and data analysis, 20 marks of questions testing across the specification and 30 marks of multiple choice questions.

WIDER READING

Magazines and Journals:

Chemistry Review

The Mole

Nature

Scientific American

British Medical Journal (www.bmj.com)

New Scientist (available in the library or see www.newsscientist.com)

Books:

Why Chemical Reactions Happen, James Keeler

The Disappearing Spoon...and other true tales from the Periodic Table by Sam Kean

Napoleon's Buttons: How 17 Molecules Changed History by Penny Le Couteur, Jay Burreson

Made to Measure: New Materials for the 21st Century by Philip Ball

The Pleasure of Finding Things Out, Richard Feynman

Periodic Tales, Hugh Aldersey-Williams

Uncle Tungsten, Oliver Sachs

The Shocking History of Phosphorus: A Biography of the Devil's Element, John Emsley