

Year 13 - OCR A-level (H432) Chemistry

Timing	Unit Title	Key Question	Knowledge	Assessing understanding
Autumn Term 1	Module 6 Chapter 26 Carbonyls and carboxylic acids	What are the key reactions in carbonyl chemistry?	<ul style="list-style-type: none"> ● Properties and reactions of aldehydes and ketones ● Testing for aldehydes and ketones ● Mechanism of nucleophilic addition ● Properties and reactions of carboxylic acids ● Synthesis of acyl chlorides and esters ● Reactions of esters, acyl chlorides and acid anhydrides 	<p>How understanding is assessed Students will be assessed on their ability to:</p> <ul style="list-style-type: none"> ● Recall the knowledge covered ● Explain the chemical phenomena ● Interpret graphical and experimental data ● Make connections between different areas of understanding. <p>Skills</p> <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Chemical calculations <p>Assessment point information</p> <ul style="list-style-type: none"> ● Written test ● Teacher continuous assessment ● Required Practical Activity 9.2 Measuring rate ● Required Practical Activity 10.1 Rate and mechanism ● Required Practical activity 10.3 Arrhenius plot ● Required Practical activity 7.3 (part 1) Identifying organic compounds
	Module 5 Chapter 18 Rate of reaction	How can we measure how fast a reaction will go?	<ul style="list-style-type: none"> ● Rate equations, rate constants and order of reaction ● Experimental determination of rate equations ● Graphical analysis of rate data ● Half life ● Rate determining step and reaction mechanism ● The effect of temperature on rate ● Arrhenius plots 	
	Module 5 Chapter 18 Energy and entropy	What determines if a reaction will go?	<ul style="list-style-type: none"> ● Lattice enthalpy and Born Haber cycles ● Enthalpy changes in solution and predicting solubility ● Entropy ● Gibbs Free Energy and feasibility 	

	Module 5 Chapter 20 Acids, bases and pH	How can we explain the properties of a range of acids and bases?	<ul style="list-style-type: none"> ● Acids bases and pH ● K_a and K_w ● Titrations and indicators ● Buffers and buffer calculations, 	
Autumn Term 2	Module 6 Chapter 29 Analytical techniques	How can we determine the structure of organic molecules?	<ul style="list-style-type: none"> ● Chromatography ● ^{13}C NMR nuclear magnetic resonance spectroscopy ● Proton NMR ● Combined techniques 	How understanding is assessed Students will be assessed on their ability to: <ul style="list-style-type: none"> ● Recall the knowledge covered ● Explain the chemical phenomena ● Interpret graphical and experimental data ● Make connections between different areas of understanding. Skills <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Chemical calculations Assessment point information <ul style="list-style-type: none"> ● Written test ● Teacher continuous assessment ● Required Practical activity 11.2 pH curves ● Required Practical activity 7.3 (part 2) Chromatography
	Module 5 Buffers and neutralisation Chapter 21	How do buffers work to control pH?	<ul style="list-style-type: none"> ● Neutralisation ● What is a buffer solution ● Calculating pH of buffers ● Buffer solutions in the body 	

Spring Term 1	Mock Exams		<ul style="list-style-type: none"> ● Mock exams will cover all of the Chemistry learned during Year 12 and the Autumn Term of Year 13 	<p>How understanding is assessed Students will be assessed on their ability to:</p> <ul style="list-style-type: none"> ● Recall the knowledge covered ● Explain the chemical phenomena ● Interpret graphical and experimental data ● Make connections between different areas of understanding. <p>Skills</p> <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Chemical calculations <p>Assessment point information</p> <p>Based on two written mock examination papers:</p> <ul style="list-style-type: none"> ● Physical and Inorganic chemistry ● Organic Chemistry and Analytical techniques
	Module 5 Chapter 23 Redox	How can we use an understanding of redox in titrimetric analysis and in predicting reactions?	<ul style="list-style-type: none"> ● Oxidation number ● Reaction stoichiometry and redox titrations ● Measuring E^\ominus ● Predicting feasibility and extent of reactions 	
	Module 6 Chapter 27 Nitrogen chemistry	How is DNA bonded? What other molecules are similar?	<ul style="list-style-type: none"> ● Reactions of aliphatic and aromatic amines ● Amides ● Amino acids, polypeptides and proteins ● Chirality ● Polyesters and polyamides e.g. nylon. 	

Spring Term 2	Module 6 Chapter 28 Organic synthesis	How can we make useful organic products in the laboratory?	<ul style="list-style-type: none"> ● Review of practical skills and activities ● Synthetic routes ● Practical processes for synthesis 	How understanding is assessed Students will be assessed on their ability to: <ul style="list-style-type: none"> ● Recall the knowledge covered ● Explain the chemical phenomena ● Interpret graphical and experimental data ● Make connections between different areas of understanding. Skills <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Chemical calculations Assessment point information Based on: <ul style="list-style-type: none"> ● Completed folders for the Practical Endorsement ● Required Practical activity 12 Analysing iron tablets ● Required Practical activity 8.1 Electrochemical cells
	Module 5 Chapter 24 Transition metals	How do transition metals react?	<ul style="list-style-type: none"> ● What is a transition metal and what are their characteristic properties ● Complex ions and stereoisomerism ● Ligand substitution and precipitation ● Redox and qualitative analysis 	
	Mock Exams and revision	What is the best preparation for your A- level exams	<ul style="list-style-type: none"> ● Revision and past paper practice 	

Summer Term				<p>How understanding is assessed Students will be assessed on their ability to:</p> <ul style="list-style-type: none">● Recall the knowledge covered● Explain the chemical phenomena● Interpret graphical and experimental data● Make connections between different areas of understanding. <p>Skills</p> <ul style="list-style-type: none">● Description● Explanation● Evaluation● Comparison● Planning and carrying out investigations● Chemical calculations <p>Assessment point information</p> <p>Based on:</p> <ul style="list-style-type: none">● Further mock examination paper
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