OXFORD AQA
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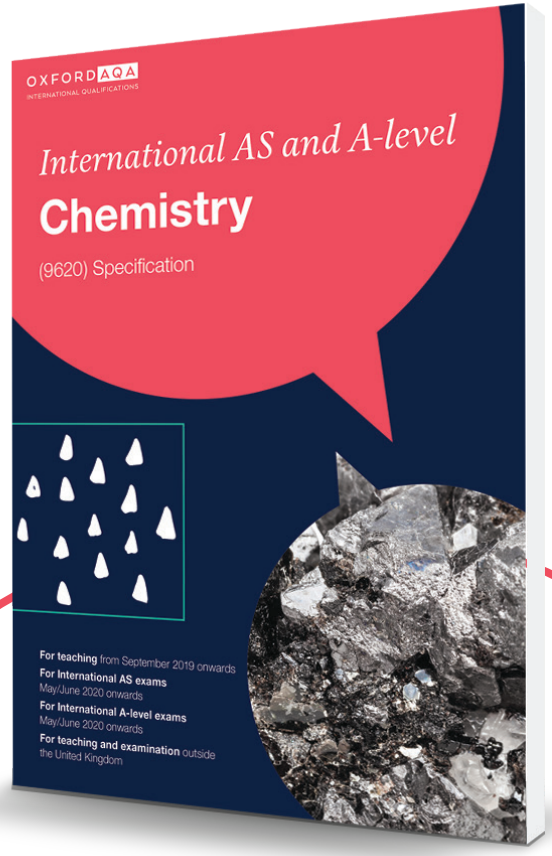
Switching Guide

International AS and A-level
Chemistry
(9620)



Switching from Pearson Edexcel or Cambridge International to OxfordAQA International Qualifications

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At OxfordAQA
we put fairness first

OXFORD AQA
INTERNATIONAL QUALIFICATIONS

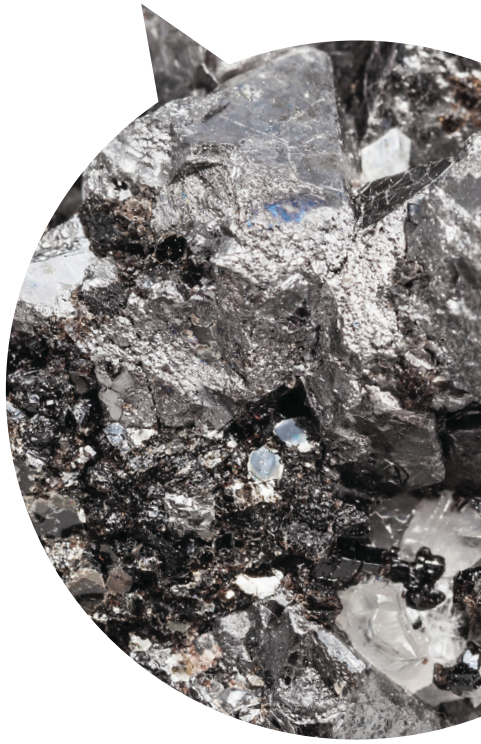
The international exam board *that puts fairness first*

Switching to OxfordAQA International AS and A-level Chemistry (9620)

Mirroring the way many universities split their content, the **OxfordAQA International AS and A-level Chemistry** specification gives students a broad range of experience in the three areas of physical, organic and inorganic chemistry.

Key features:

- Our papers are carefully designed to avoid cultural or linguistic bias, and include a range of question styles allowing students to demonstrate skills, logical thinking and depth of knowledge.
- Practical components are flexible around local access to equipment and materials with practical knowledge assessed through the main exam papers.
- The latest version of this specification takes a more modular approach to physical chemistry, with units re-ordered to simplify teaching and revision.



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Topic by topic comparison

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
Overall structure		
Split into five units (2 AS and 3 A2): Listed in order of assessment within the specification. • Inorganic 1 and Physical 1 (AS) • Organic 1 and Physical 1 (AS) • Inorganic 2 and Physical 2 (A2) • Organic 2 and Physical 2 (A2) • Practical and Synoptic (A2) Each unit has a number of topics of which Physical chemistry has 7AS and 5 A2, Inorganic chemistry 3 AS and 3 A2, and Organic Chemistry 6 AS and 10 A2. There is a list of 4 required practical exercises for AS and another 6 for A2. These are also integrated into the specification at the end of the appropriate topic. There is no separate laboratory practical exam and practical skills are developed throughout the course but assessed on a written paper. For AS there are two exams, one for unit 1 and one for unit 2. For A2 there are three exams, one for unit 3, one for unit 4 and a practical and synoptic paper. All five exams make up the A-level. Four of the papers are the same length but vary in the number of marks and weighting.	**Split into six units** (3 AS and 3 A2): • The Core Principles of Chemistry (AS) • Application of Core Principles of Chemistry (AS) • Chemistry Laboratory Skills I – Alternative (AS) • General Principles of Chemistry I – Rates, Equilibria and Further Organic Chemistry (A2) • General Principles of Chemistry II – Transition Metals and Organic Nitrogen Chemistry (A2) • Chemistry Laboratory Skills II – Alternative (A2) For AS there are three written exams, the third one testing practical work carried out in the first two units. The same applies to the three A2 written papers. Real emphasis is placed on How Science Works and there are mapping and expansion on specific subject content appendices in the specification. There is a more concept-board approach and building on ideas at various levels which involves looking in lots of different areas of the specification. There is less of a division between the various areas of chemistry and knowledge on a topic is gained from many different sections of the specification leading to a similar coverage of a topic. The six exams that make up the A-level are of different length and weightings. Practical work is indicated in the specification but there is no specific content for Unit 3 or Unit 6 although there is guidance on what the practical written exams will cover.	**Four main sections** divided into 37 units (22 of which are covered at AS and 15 covered at A2, of which 13 are building on knowledge from the topic at AS level and two are only studied at A2 level). For AS there are two theory exams, one of which is multiple choice. These two papers both assess the entire AS content, and with the practical paper constitute the AS level qualification. For A2 there is one theory exam plus the practical theory paper. All five exams make up the A-level. Candidates are restricted in that they can enter all papers in either June or November (or March for India). Candidates **must** take: • AS Papers 1, 2 and 3 in a single sitting • A2 Papers 4 and 5 in a single sitting Candidates may not enter for single papers either on the first occasion or for resit purposes. Practical work is assessed via an exam paper at AS and A2. At AS candidates will be required to carry out practical work under timed conditions, collect, record and analyse data so they can answer questions related to the activity. At A2 there is a theory paper focussing on higher-order experimental skills of planning, drawing conclusions, analysis and evaluation which will require laboratory work throughout the course but not for the actual exam. Practical procedures are collated in one chapter of the specification.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
Content	**Coverage**	**Coverage**
3.1.1 Atomic structure	Some of this is covered in Pearson Edexcel section 1.5 and some in 1.3. OxfordAQA look at fundamental particles and existence of isotopes and TOF mass spectrometry. Pearson Edexcel looks at the basic principles of mass spectrometry and more of its uses. Pearson Edexcel covers electron density plots for s and p orbitals.	This is covered by Cambridge International in sections 1.1-1.4 Very similar content in both specifications. OxfordAQA have (TOF) mass spectrometry in this section whereas normal mass spectrometry (no working of the mass spectrometer required) is covered by Cambridge International in section 1.3 Cambridge International asks students to deduce the behaviour of beams of particles in electric fields. Cambridge International asks students to describe and sketch the shapes of s and p orbitals.
3.1.2 Amount of substance	This is covered in Pearson Edexcel sections 1.3 and 1.5. Similar content on both specifications but Pearson Edexcel requires an understanding of ppm. OxfordAQA only uses moldm^{-3}. OxfordAQA use the ideal gas equation to calculate gas volumes Pearson Edexcel use molar volumes of gases. OxfordAQA have simple acid-base titrations at this stage.	This is covered in Cambridge International sections 2.1-2.4 and 4.1 In general a similar level of detail in both. Cambridge International cover the origin of pressure in a gas and limitations of ideal gas behaviour. OxfordAQA cover percentage atom economies and advantages. Cambridge International deduce stoichiometric relationships from calculations. OxfordAQA has required practical 1 integrated in the relevant subject content.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.1.3 Bonding	This is covered in Pearson Edexcel section 1.6. OxfordAQA go into more detail in this section. Pearson Edexcel considers electron density maps, introduces the Born Haber cycle to test the ionic model and explain why certain ionic compounds exist, dot and cross diagrams are emphasised more. Shapes of molecules are covered in 2.3 and also includes fullerenes and carbon nanotube structures. OxfordAQA cover the topic giving specified elements and compounds to study to illustrate the various types of bonding and include shapes of molecules and ions, bond polarity and intermolecular forces and links to physical properties. Pearson Edexcel covers intermediate bonding and bond polarity in 2 .4 and 2.5.	This is covered in Cambridge International sections 3.1-3.7 and 4.2 Covered in similar detail except that Cambridge International Includes: • Dot-and-cross diagrams for ionic and covalent bonding • σ and TT bonding • sp, sp^2 and sp^3 hybridisation • Surface tension in water OxfordAQA uses the term van der Waals' force to describe induced dipole-dipole forces between molecules whereas Cambridge International use VDW as a generic term to describe all intermolecular forces.
3.1.4 Energetics	This is covered in Pearson Edexcel section 1.4. Similar content on both specifications at this level.	This is covered in Cambridge International section 5.1-5.2 Similar content and approach. Cambridge International includes reaction pathway diagrams. OxfordAQA has required practical 2 integrated in the relevant subject content.
3.1.5 Oxidation, reduction and redox equations	This is covered in Pearson Edexcel section 2.6. Covered in a similar level of detail in both specifications.	Covered in Cambridge International section 6.1 Similar content.
3.1.6 Kinetics	This is covered in Pearson Edexcel section 2.8. The Pearson Edexcel specification offers less detail in the various sections covered whereas OxfordAQA offer more specific details.	This is covered in Cambridge International section 8.1-8.3 Similar content and approach although OxfordAQA leaves the use of experimental data to calculate the rate of a reaction until A2.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.1.7 Chemical equilibria, Le Chatelier's principle and Kc	This is covered in Pearson Edexcel 2.9. The Pearson Edexcel specification offers less detail in Unit 2 and requires only the basic understanding of chemical equilibria and Le Chatelier's principle. OxfordAQA specification covers this topic in more detail at this level including compromise conditions as well as deriving K_c, calculations using K_c and predicting the effects of changing temperature on the value of K_c.	Covered in Cambridge International section 7.1 Similar content and approach but Cambridge International requires K_p calculations as well as Kc calculations at AS level. OxfordAQA leaves K_p until A2 level where the topic is covered in detail and does not require the specific conditions of the Haber or Contact processes.
3.1.8 Thermodynamics	This is covered in Pearson Edexcel section 4.4 and 4.6. OxfordAQA looks at Born Haber Cycles in detail including calculations in this section at A2. This was covered in less detail by Pearson Edexcel in section 1.6 at AS. There are differences in approach to the topic of entropy. OxfordAQA uses the idea of disorder and Gibbs free energy and equation to look at feasibility and the effect of temperature and the calculations and requirements using the equation are given. Pearson Edexcel looks at entropy as the random dispersal of molecules and of energy quanta and the change in total entropy in terms of the change in entropy of the system and surroundings.	Covered in Cambridge International sections 23.1-23.4 Cambridge International and OxfordAQA have similar approaches to Born Haber cycles, enthalpy of solution, Entropy and Gibbs free energy.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.1.9 Electrode potentials and electrochemical cells	This is covered in Pearson Edexcel mainly in section 5.3 1. Pearson Edexcel links E_{cell} to entropy and ln K which OxfordAQA do not. The OxfordAQA specification gives a more detailed approach to requirements in this section.	Covered in Cambridge International section 24.1-24.2 OxfordAQA include more detail on commercial applications of electrochemical cells. Cambridge International uses the relationship F = Le and the Nernst equation in electrolysis calculations whereas in OxfordAQA this is not required. OxfordAQA has required practical 6 integrated in the relevant subject content.
3.1.10 Acids and Bases	This is covered in Pearson Edexcel section 4.7. Similar coverage of this topic and mainly similar level of detail given in both specifications.	Covered in Cambridge International section 7.2 and 25.1 Similar coverage in both specifications although K_{sp} and partition coefficients are covered by Cambridge International. OxfordAQA has required practical 7 integrated in the relevant subject content.
3.1.11 Rate equations	This is covered in Pearson Edexcel section 4.3. Covered in a similar level of detail with the OxfordAQA specification being more specific in the requirements in various sections such as definitions and calculations required. The Pearson Edexcel specification also includes the following: • Half-life and its deduction from experimental data (eg a clock reaction) • Colorimetry • Iodination of propanone • SN1 and SN2 reactions considered in nucleophilic substitution of haloalkanes The OxfordAQA specification includes: • The Arrhenius equation and calculations and associated graphs	Covered in Cambridge International section 26.1 OxfordAQA and Cambridge International have similar coverage of this subject area but differ in two main areas. OxfordAQA use the Arrhenius equation and its use in calculations and graphical data. Cambridge International does not cover this area but has included the concept of half–life of a reaction. OxfordAQA has required practical 8 integrated in the relevant subject content.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.1.12 Equilibrium constant K_p for homogeneous systems	This is covered in Pearson Edexcel sections 4.5 and 4.6. OxfordAQA split this section, looking at Kc in section 3.1.6 (which is AS) whereas Pearson Edexcel looks at both Kc and Kp in this section at A2. The OxfordAQA specification gives a greater level of detail as to requirements for Kp. Pearson Edexcel include the use of entropy and its link to ln K and the distribution of a substance between two immiscible solvents.	Covered in Cambridge International section 7.1 For Cambridge International this is an AS concept, A2 for OxfordAQA.
3.2.1 Periodicity	This is covered in Pearson Edexcel sections 1.5 and 2.7. Similar coverage Pearson Edexcel specifies Period 2 and well as Period 3.	Covered in Cambridge International section 9.1 Very similar introduction to the topic on both specifications.
3.2.2 Group 2, the alkaline earth metals	This is covered in Pearson Edexcel 2.7 1. Many similarities but some differences in the two specifications. Pearson Edexcel requires the following: • The reaction with oxygen and chlorine • The reaction of the oxides with acid • The thermal stability of the nitrates and carbonates • Flame tests OxfordAQA requires the following: • The use of Mg in the extraction of titanium • The uses of various Group 2 compounds • Test for sulfate ions	Covered in Cambridge International in sections 10.1 and 27.1 OxfordAQA covers this topic at AS level whereas Cambridge International covers this at both AS and A2. Cambridge International looks at the chemistry of Group 2 elements in a slightly different way and covers oxides as well as the hydroxides, nitrates and carbonates. At A2 Cambridge International requires qualitative reasons for thermal stability and solubility. OxfordAQA looks at the uses of Group 2 elements and compounds in more detail.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.2.3 Group 7(17), the halogens	This is covered in Pearson Edexcel 2.7 2. This is covered in similar detail but Pearson Edexcel includes iodine/thiosulfate titrations and the disproportionation reaction between chlorine with hot as well as cold NaOH. OxfordAQA includes uses of chlorine and chlorate(I).	Covered in Cambridge International sections 11.1-11.4 Covered in similar detail. Cambridge International requires a knowledge of the reaction of hot as well as cold aqueous NaOH with chlorine, reactions of halogens with hydrogen, and thermal stability of hydrogen halides. OxfordAQA has required practical 3 integrated in the relevant subject content.
3.2.4 Properties of Period 3 elements and their oxides	This is covered in Pearson Edexcel section 1.5 k. The OxfordAQA specification covers this in detail as a separate topic rather than a subsection and is specific in the areas of Period 3 to be studied.	Covered in Cambridge International section 9.2-9.3 Covered in similar detail.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.2.5 Transition metals	This is covered in Pearson Edexcel section 5.3. There is some different content in this section; some related to the way the specification is organised. The Pearson Edexcel specification starts with revising knowledge of oxidation number and standard electrode potential values and linking $E_{cell}^{\ominus}$ to the total entropy change and lnK for a reaction. The OxfordAQA specification does not relate entropy to standard cell electrode potentials in the same detail. The coverage of transition metals is similar but the OxfordAQA specification contains detailed information and requirements in various subsections. The Pearson Edexcel specification includes: • Iodine /thiosulfate titrations • Includes chromium , manganese and nickel and zinc chemistry The OxfordAQA specification includes: • Cobalt chemistry • E-Z Isomerism • Chelate effect related to entropy and enthalpy changes • The equation for colour in transition metal complexes • Colorimetry • Vanadium chemistry • Transition metals being used as homogeneous and heterogeneous catalysts	Covered in Cambridge International sections 26.2, 28.1-28.5 Both specifications cover this topic at A2 level in similar detail. OxfordAQA uses and applies an equation to explain formation of coloured ions, colorimetry, the chelate effect and looks at haem as an iron(II) complex with a multidentate ligand. Cambridge International looks at stability constants K_{stab}

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.2.6 Reactions of ions in aqueous solution	Covered in Pearson Edexcel section 5.3. OxfordAQA covers this topic separately. Pearson Edexcel have incorporated this into section 5.3. Some differences in the reactions considered but a similar approach taken.	Covered mainly in Cambridge International section 28.2 OxfordAQA cover this topic in a little more detail although practical requirements are similar for both specifications. OxfordAQA has required practical 9 integrated in the relevant subject content.
3.3.1 Introduction to organic chemistry	Covered in Pearson Edexcel section 1.7 1. Covered in a greater level of detail by the OxfordAQA specification, introducing a lot of organic specific terms and topics such as isomerism and reaction mechanisms these being covered in more detail in the relevant organic sections as well. Pearson Edexcel look at hazards and the application to organic reactions and techniques. Some of topics covered by OxfordAQA in the introduction are covered in the relevant sections by Pearson Edexcel, an example being E-Z isomerism in alkenes covered in 1.7 3.	Covered in Cambridge International section 13.1 to 13.4. There are many similarities if the whole organic chemistry specifications are looked at, although there is a different approach to the introduction. Cambridge International has a broad summary of terms in these sections and requires knowledge and use of σ and ττ bonding. OxfordAQA tends to incorporate some of these terms into the study of the various homologous series where appropriate and cover Cahn-Ingold-Prelog (CIP) priority rules in naming stereoisomers.
3.3.2 Alkanes	Covered in Pearson Edexcel section 1.7 2. Similar content except Pearson Edexcel: • Uses curly half arrows in the free radical substitution mechanism • Mentions reformation of crude oil OxfordAQA: • Goes into more detail re: cracking • Covers internal combustion engine and pollutants • Requires equations with radicals but no requirement for curly half arrows in the free radical substitution reaction	Covered in Cambridge International section 14.1 The two specifications have a slightly different approach although the content is very similar in both. OxfordAQA cover topics such as the internal combustion engine and catalytic converters in this section linked to combustion of alkanes. Cambridge International section 12.1 looks at nitrogen and sulfur chemistry – there is no comparable section in OxfordAQA although a lot of the content is spread throughout the specification.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.3.3 Halogenoalkanes	Covered in Pearson Edexcel section 2.10.2. Covered in a greater level of detail by the OxfordAQA specification where the use of mechanisms is identified. Mechanisms are covered under a separate heading in Pearson Edexcel 2.11 whereas OxfordAQA includes them in the relevant section. The Pearson Edexcel specification covers nomenclature and the reactions and reactivity of the primary, secondary and tertiary halogenoalkanes. In the OxfordAQA specification the nucleophilic substitution reaction of halogenoalkanes with the cyanide ion is also included. The role of the hydroxide ion as both a nucleophile and base is covered and the mechanism of the elimination reaction is required.	Covered in Cambridge International sections 15.1 and 19.2 Covered into similar detail. Cambridge International also includes S_N1 and S_N2 mechanisms and the inductive effects of alkyl groups which is covered by OxfordAQA in the alkene section.
3.3.4 Alkenes	Covered in Pearson Edexcel section 1.7 3. Covered in a similar level of detail except that: The Pearson Edexcel specification requires the following: • σ and TT bonds • Oxidation of the double bond by potassium manganate(VII) The OxfordAQA specification requires: • The electrophilic addition of H2SO4 as well as HBr and Br2 • Looks at intermolecular forces between polymer chains • Has epoxyethane in this section	Covered in Cambridge International section 14.2, 20.1 and 35.2 Similar coverage of certain areas but there are differences between the two specifications. Cambridge International has oxidation by cold and hot acidified manganate(VII) ions. OxfordAQA has the electrophilic addition of H2SO4 and looks at the intermolecular forces between molecules of polyalkenes. OxfordAQA include epoxyethane, equations, mechanisms and uses.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.3.5 Alcohols	Covered in Pearson Edexcel section 2.10.1. Covered in a greater level of detail by the OxfordAQA specification. There are some areas in common but the OxfordAQA specification include: • The industrial manufacture of alcohols by the hydration of alkenes • The fermentation of glucose to produce ethanol • Biofuels • The mechanism for the formation of ethanol by the reaction of an alkene with steam in the presence of an acid catalyst • The mechanism for the elimination of water from alcohols • Using Tollens' and/or Fehling's to distinguish between aldehydes and ketones The Pearson Edexcel specification includes: • The reaction of alcohols with sodium • Substitution reactions of alcohols to form halogenoalkanes (PCl5)	Covered in Cambridge International section 16.1 Very similar content in the two specifications. Cambridge International has the reaction of alcohols with Na, reactions to produce halogenalkanes and the test using alkaline aqueous iodine to form tri-iodomethane. At A2 level, Cambridge International looks at the reactions of phenol in various sections which the OxfordAQA specification does not. OxfordAQA has the mechanism for the acid-catalysed elimination of water from alcohols. OxfordAQA has required practical 4 integrated in the relevant subject content.
3.3.6 Organic analysis	Covered in Pearson Edexcel sections 2.12 and 4.9. Similar coverage of the mass spectrometry and infra red spectroscopy topic.	Covered in Cambridge International sections 22.1 and 22.2 and the practical section for identification of functional groups. Both cover infrared spectroscopy at AS although OxfordAQA cover the topic in a little more detail. Cambridge International covers mass spectrometry in more detail. OxfordAQA has required practical 5 integrated in the relevant subject content.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.3.7 Optical isomerism	Covered in Pearson Edexcel section 4.8.1. Similar coverage on this topic.	Covered in Cambridge International section 29.4 Very similar coverage on both specifications although Cambridge International explores the relevance of chirality to the synthetic preparation of drug molecules.
3.3.8 Aldehydes and ketones	Covered in Pearson Edexcel in section 4.8 2. Similar in coverage but the OxfordAQA specification gives more detail of mechanism and equation requirements. The Pearson Edexcel specification requires: • $LiAlH_4$ in dry ether as a reducing agent • 2,4-dinitrophenylhydrazine to detect the presence of a carbonyl group • Iodine in the presence of alkali In the OxfordAQA specification: • NaBH4 is used as the reductant and a mechanism is required using H- ions	Covered in Cambridge International section 17.1 and 19.2 Covered in similar detail. OxfordAQA include the mechanism for H- addition as well as HCN and looks at enantiomer formation in nucleophilic addition reactions with KCN, followed by dilute acid. Cambridge International coverage is at AS level and includes the 2,4–DNPH reagent test for aldehydes and ketones as well as the tri-iodomethane test.
3.9 Carboxylic acids and derivatives	Covered in Pearson Edexcel sections 4.8 3 and 4.8.4. The OxfordAQA specification has more guidance although similar content is covered. The Pearson Edexcel specification has the reaction of acids with PCl_5 and $LiAlH_4$ as a reducing agent. OxfordAQA look at nucleophilic addition-elimination mechanisms with acid anhydrides as well as acyl chlorides.	Covered in Cambridge International sections 18.1-18.2, 32.1 and 33.1-33.3 Covered in similar detail except Cambridge International splits this across AS and A2 level. Cambridge International includes the formation of alcohols and acyl chlorides from carboxylic acids, formation of carboxylic acids from nitriles and includes phenol and methanoic acid. OxfordAQA look at the hydrolysis of animal fats to produce soap and biodiesel and includes reactions of acid anhydrides as well as acyl chlorides. OxfordAQA has required practical 10 integrated in the relevant subject content.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.3.10 Aromatic chemistry	Covered in Pearson Edexcel section 5.4 1. Similar coverage but Pearson Edexcel expects knowledge of some phenol chemistry as well.	Covered in Cambridge International sections 29.1-29.3, 30.1 and 31.1 There are differences between the two specifications. Cambridge International has phenol in section 32.2 has no comparable section on the OxfordAQA exam. Cambridge International has hydrogenation, substitution reactions with halogens, oxidation of side chains and substitution of monosubstituted arenes. OxfordAQA also has the mechanism for sulfonation of benzene.
3.3.11 Amines	Covered in Pearson Edexcel section 5.4 2. This section in the Pearson Edexcel specification covers amides, amino acids and proteins as well as amines which are covered in separate sections by OxfordAQA. The section on amines in the Pearson Edexcel specification includes the formation of benzenediazonium ions and dye formation. OxfordAQA do not include diazonium ion formation but do include quaternary ammonium salts and nucleophilic substitution and addition – elimination reactions in this section.	Covered in Cambridge International section 19.1 and 34.1-34.3 Covered in similar detail. OxfordAQA look at all classes of amine whereas Cambridge International focuses on primary amines. Cambridge International looks at reactions of aromatic amines with Br_2 and HNO_2 to produce diazonium salts and then onto dye formation, reduction of amides and of nitriles.
3.3.12 Polymers	Covered in Pearson Edexcel section 5.4.2. Covered in a similar level of detail in both specifications.	Covered in Cambridge International section 35.1-35.3 Covered in similar detail, except Cambridge International includes a few more examples of uses.

OxfordAQA specification (9620)	Pearson Edexcel International specification	Cambridge International specification
3.3.13 Amino acids and proteins	Covered in Pearson Edexcel section 5.4 2. OxfordAQA cover this section in more detail on the specification. They require the use of R_f values.	Covered in Cambridge International section 34.4 Covered in similar detail. OxfordAQA use chromatography to separate and identify amino acids whereas Cambridge International looks at electrophoresis and the effect of pH. OxfordAQA has sections on proteins and anticancer drugs.
3.3.14 Organic synthesis	Covered in Pearson Edexcel section 5.4 3. Similar content in this section but the Pearson Edexcel specification has some sections on deduction of empirical, molecular and structural formulae which are covered in a different section in OxfordAQA. OxfordAQA use atom economy to design and compare production methods.	Covered in Cambridge International section 21.1 and 36.1 Similar detail covered except that OxfordAQA include atom economy to look at alternative methods of production as well as the overall hazards and route of synthesis.
3.3.15 Nuclear magnetic resonance spectroscopy	Covered in Pearson Edexcel section 4.9. The Pearson Edexcel specification does not include ^{13}C NMR whereas OxfordAQA does.	Covered in Cambridge International sections 37.3-37.4 Covered in similar detail.
3.3.16 Chromatography	Covered in Pearson Edexcel section 4.9. Similar coverage but Pearson Edexcel includes GC and HPLC whereas OxfordAQA include GC, CC and TLC as well as retention times and R_f values in this section and the use of mass spectrometry in GC.	Covered in Cambridge International section 37.1-37.2 Covered in similar detail in both specifications.

Topics in the Pearson Edexcel specification that OxfordAQA does not cover

Section of the Pearson Edexcel International specification	Topic
1.3/1.5	• ppm used • Electron density plots for s, p orbitals
1.6	• Fullerenes • Carbon nanotube structures
1.7 2	• Curly half arrows used in the free radical substitution mechanism • Reformation of crude oil
1.7 3	• Oxidation of the C=C using potassium manganate(VII) • σ and π bonds
2.7 1	• Reaction of group 2 metals with oxygen and chlorine • Thermal stability of the nitrates and carbonates • Flame tests
2.7 2	• Iodine/thiosulfate titrations • Disproportionation reaction of chlorine with hot NaOH
2.10 1	• Reaction of Na and PCl5 with alcohols
2.11	• Separate section on Mechanisms OxfordAQA has no comparable section and covers these in the appropriate sections
2.13	• Separate section on Green Chemistry OxfordAQA has no comparable section and covers these areas in the appropriate sections
4.3	• ½ life • Iodination of propanone • SN1 and SN2 reactions
4.4/4.6/5.3	• Approach to entropy different in relating it to Ecell and lnK

Section of the Pearson Edexcel International specification	Topic
4.8 2	• LiAlH4 used as a reductant • Iodine/alkali reaction • 2.4-dinitrophenylhydrazine used
4.9	• HPLC covered
5.3	• Chromium, manganese, nickel and zinc chemistry
5.4 1	• Phenol chemistry
5.4 2	• Diazonium ion formation and use
Appendices	• Pearson Edexcel has a large number of appendices at the end of the specification looking at for example performance descriptions and how science works.

Topics in the Cambridge International specification that OxfordAQA does not cover

Section of the Cambridge International specification	Topic
1.1	Protons, electrons and neutrons in an electric field
1.3	Shapes of s,p and d orbitals
3.4	σ and π bonding sp, sp^2 and sp^3 hybridisation
3.6	Surface tension
4.1	Origin of pressure in a gas and limitations of ideal gas behaviour
11.2	Reactions of halogens with hydrogen, and thermal stability of hydrogen halides
12.1	No comparable section on nitrogen and sulphur chemistry
17.1	2,4–DNPH reagent test for aldehydes and ketones as well as the tri-iodomethane test
24.1	Electrolysis and calculations: $F = Le$ and Q = It
24.2	Use of Nernst equation
25.1	Solubility product, K_{sp}
25.2	Partition coefficients
26.1	Half-life
27.1	Thermal stability of carbonates and nitrates
28.5	Stability constants in transition metal chemistry
30.1	Hydrogenation, substitution reactions with halogens, oxidation of side chains and substitution of monosubstituted arenes
32.2	Phenol
34.1	Reduction of amides and of nitriles
34.2	Diazonium salt formation and uses
34.4	Electrophoresis
34.7	Proton exchange in ^1H NMR using D_2O

OXFORD AQA
INTERNATIONAL QUALIFICATIONS

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