

**Course Title: Understanding Assessment
& Effective Delivery**

Event Code: 16IAS11

Trainer:

This full day event is designed to introduce new teachers to International GCSE Chemistry and for experienced teachers to refresh the knowledge of some aspects of it

Delegates will:

- Look at some features of the specification and its assessment
- Learn about the process used to produce question papers and the purposes of different question types
- Consider common errors in student answers and how these can be addressed in their teaching
- Review course planning and share good practice in teaching a difficult topic
- Gain a brief overview of the new International GCSE in Chemistry (9-1); first teaching from September 2016

Session Agenda

09:30 – 10:00	Arrival and registration, tea and coffee
10:00 – 10:10	Welcome, agenda and introductions
10:10 – 11:25	Session 1
11:25 – 11:45	Morning break
11:45 – 13:00	Session 2
13:00 – 13:30	Lunch
13:30 – 15:00	Session 3
15:00 – 15:30	Plenary and departure

Session 1 Content

We will include a look at

- Some parts of the specification – not just the content
- Ramping and grade coverage
- Different question types
- Assessment objectives and command words
- Advice for students when sitting examination papers
- The effect on students of structuring a calculation question
- The setting, marking and awarding processes

Session 2 Content

This session looks at some questions from the Summer 2016 session

Good and not so good answers are considered

A chance for you to mark an example of each one

Session 3 Content

This session will look at resources and teaching, including:

- Websites
- Course planning
- Practical work
- Teaching a topic that students find difficult

The specifications

4335 specification for first exams in 2005

4CH0 specification for first exams in 2011

4SC0 code

KCH0 and KSC0 codes

Regional papers (eg 1CR and 2CR) used in May/June sessions only

R papers used in Far East, and are of same standard and test the same topics

4CH0 specification

Content areas

- Principles of chemistry
- Chemistry of the elements
- Organic chemistry
- Physical chemistry
- Chemistry in industry

Content in bold for Chemistry, not Double Award

4CH0 assessment summary

Paper	Length	Marks	Weighting
1C	2 hours	120	66.7%
2C	1 hour	60	33.3%

January and summer sessions

1C tests all content not in bold

2C tests all content including bold

1C + 1P + 1B taken by Double Award students

1C + 2C taken by Chemistry students

1C and 2C both cover full range of grades A* - G

Ramping and Question types

- Need to cover 8 grades
 - Gradient of difficulty through paper
 - Gradient of difficulty through question, where possible
 - Note the cover advice: 'Try to answer every question'
-
- Multiple choice
 - Closed questions (words in boxes)
 - Short answer (usually 1-3 marks)
 - Open response (usually 4 or more marks)
 - Other – graphs, calculations

Activity 1 – multiple choice questions

We will look at some multiple choice questions used in recent 4CH0 question papers

The aim of the activity is to consider how your students might answer them and how your teaching strategy might increase their chances of success in these questions

Then have a go at writing a simple multiple choice question yourself!

Assessment objectives

		%
AO1	Knowledge and understanding	45-50
AO2	Application of knowledge and understanding, analysis and evaluation	27.5-32.5
AO3	Experimental skills, analysis and evaluation of data and methods	20-25

Same percentages in 1C and 2C

Some question parts could be assigned to more than one assessment objective

Command words

Some used only in specification:

- Recall
- Understand

Most used in both, especially:

- Describe
- Explain
- Calculate
- Draw / sketch (diagram, displayed formula, graph)
- Write / state / give

Mark allocations and answer lines

Guidance:

- General rule is 2 lines for 1 marking point
- Space rather than lines for calculations

Also:

- Some parts have answer line prompts
- Calculations have short lines for answers

Familiar and novel questions

Some question types appear very regularly:

- Graphs
- Calculations
- Reading scales

Balance between familiar and novel questions:

- Familiar ones expected to be high scoring
- Novel ones still justified by specification wording

Structured and unstructured questions

Structured questions:

- Lead to many parts - (i), (ii) etc, worth 1 or 2 marks
- Help students know what and how much to write
- Are generally easier to mark consistently

Unstructured questions:

- Allow students to answer in their preferred ways
- Can be problematic for less able students
- Are generally more difficult to mark consistently

Activity 2

Unstructuring a structured question

Consider the structured mole calculation question

It could have been written using only the words in part (iii)
'Calculate the concentration, in mol/dm^3 , of the phosphoric acid.'

We will consider the effects of this rewriting on the way students would answer the question and whether different approaches could be marked comparably

How are question papers written?

- Writing starts up to 2 years before students sit them
- A principal examiner (PE) produces a question paper, a mark scheme and an assessment grid
- First draft reviewed by another PE, the Chair and a person with little or no knowledge of chemistry
- PE produces second draft for Reviser, who comments
- Third draft produced, then almost finalised during face-to-face meeting
- Further checks made on the chemistry, and to ensure layout is suitable and spelling and grammar are correct

How are answers marked?

- Scripts scanned and separated into individual items
- All markers look to see how students answer questions
- Comments sent to PE and Team Leaders (TLs)
- PE and TLs meet to consider answers and finalise the mark scheme
- All markers standardised using several examples of each item
- Marking online begins
- Regular checks by TLs on markers to ensure accuracy of marking
- Total marks worked out automatically

How are grades awarded?

- Total marks used to provide statistical evidence (eg mean, standard deviation) for comparison with previous exam sessions and other iGCSE sciences
- Scripts compared with those from previous sessions and grade boundary marks agreed
- Final checks made to ensure comparability of outcome with previous sessions

Grade descriptions 1

Pages 26-27 of the specification list what students should be able to demonstrate in their answers

There are different lists for grades A, C and F

Here are the first three for grade A

Candidates can:

- recall a wide range of knowledge from all areas of the specification
- use detailed scientific knowledge and understanding in many different areas relating to scientific systems or phenomena. For example, they routinely use a range of balanced chemical equations and the particle model to explain variations in reaction rates
- draw together and communicate knowledge from more than one area, routinely use scientific or mathematical conventions in support of arguments, and use a wide range of scientific and technical vocabulary throughout their work

Grade descriptions 2

Here are the others for grade A

- use scientific knowledge and understanding to describe an appropriate method for a practical task, identifying the key factors to be considered. They can recall or describe a range of apparatus required for the task. They can select a method of presenting data that is appropriate to the task; they can select information from a range of sources where it is appropriate to do so. They can identify and explain anomalous observations and measurements and the salient features of graphs
- use scientific knowledge and understanding to identify and explain patterns and draw conclusions from the evidence by combining data of more than one kind or from more than one source. They can identify shortcomings in the evidence, use scientific knowledge and understanding to draw conclusions from their evidence and suggest improvements to the methods used that would enable them to collect more reliable evidence.

Grade descriptions 3

The descriptions for grades C and F use similar wording but are less demanding:

For example, in the first bullet point, 'recall a wide range' becomes 'recall a range' for grade C, and 'recall a limited range' for grade F

Results and statistics

- Students awarded a grade from A* to G
- Double Award candidates receive a double grade, such as A*A, BB, BC based on overall performance in all three sciences
- Total entry for 1C paper in June 2016 was over 36 000
- All statistics available on website
- Separate statistics for the six separate cohorts (combinations of 4CH0, 4SC0, KCH0 and KSC0 with UK and international candidates)
- Regional papers (eg 1CR and 2CR) marked in the same ways, with grades awarded separately

June 2015 grade boundaries

How many marks are needed for a particular grade?

These are the minimum marks, and percentages, needed in June 2015 in 4CH0 for each grade:

A*	A	B	C	D	E	F	G
137	118	99	80	69	59	49	39

These marks are for 1C and 2C combined, so the marks are out of a total of 180

June 2015 outcome

All grades quoted using cumulative percentages,
ie A includes A*, B includes A*, A and B

Subject	A*	A	B	C	D	E	F	G
4CHO	38	57	72	83	87	91	94	97
4BIO	32	52	69	80	85	90	94	96
4PHO	32	52	69	81	87	92	95	97

These figures are only for the 10301 international students doing 1C and 2C (ie not UK or Double Award candidates)

Biology and physics figures are included for comparison, all rounded to the nearest 1%

Session 2 Content

This session looks at some questions from the Summer 2016 session

Good and not so good answers are considered

A chance for you to mark an example of each one

Obstacles for students

Students fail to score high marks in examinations for many reasons, including:

- Lack of knowledge of the specification content
- Not structuring answers appropriately
- Misinterpreting the question
- Unfamiliarity with command terms
- Language issues – both technical and EFL
- Insufficient experience of practical work

We will now consider some examples of student answers and what might be done to improve performance

Activity 3

Student responses to questions

In the next slides, we will look at examples of responses to several questions in 1C from the Summer 2016 session

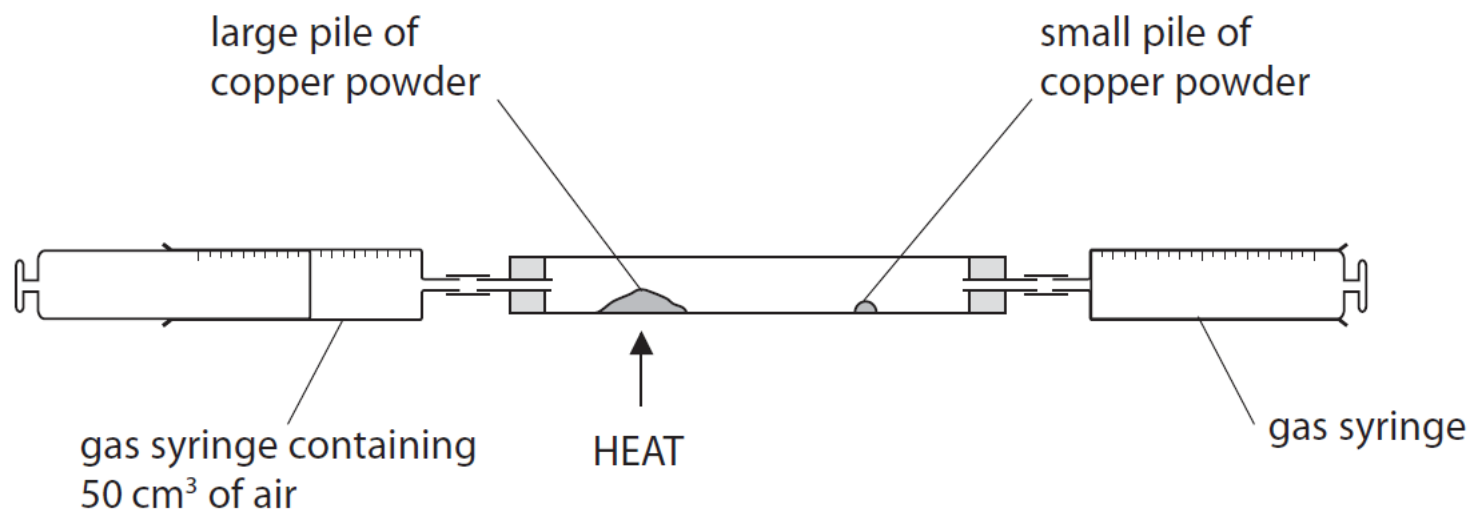
In each case there is:

- A good answer
- A less good answer
- The opportunity to consider how students could improve scores in this type of question
- A chance for you to mark another example of the same question

Student Responses

In the next slides, we will look at some examples of candidate responses, starting with 2d

This question tests the calculation of the percentage of oxygen in air from an experiment involving heating copper powder in a sample of air



A candidate who did well

In another experiment, the total volume of air in the apparatus before heating is 150 cm^3 . At the end of the experiment the volume of gas remaining is 125 cm^3 .

Use this information to calculate the percentage of oxygen in this sample of air.

(2)

$$\frac{150 - 125}{150} \times 100$$

$$= 16.6$$

$$= 16.7$$

percentage of oxygen = 16.7

A candidate who did less well

In another experiment, the total volume of air in the apparatus before heating is 150 cm^3 . At the end of the experiment the volume of gas remaining is 125 cm^3 .

Use this information to calculate the percentage of oxygen in this sample of air.

(2)

$$\frac{150}{125} \times 100\% - 100 = 20\%$$

percentage of oxygen = 20

Why candidates failed to score in 2d

The specification statement being tested is

- 2.16 explain how experiments involving the reactions of elements such as copper, iron and phosphorus with air can be used to investigate the percentage by volume of oxygen in air

How can students be better prepared to answer questions like this?

Activity – mark this example of 2d

In another experiment, the total volume of air in the apparatus before heating is 150 cm^3 . At the end of the experiment the volume of gas remaining is 125 cm^3 .

Use this information to calculate the percentage of oxygen in this sample of air.

$$\frac{125}{150} \times 100 = 83.3\%$$

(2)

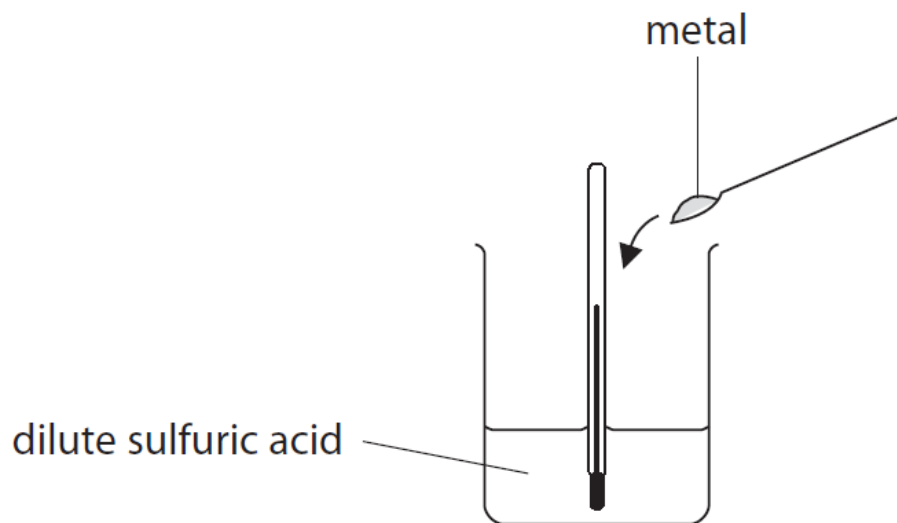
$$100 - 83.3 = 16.6\%$$

percentage of oxygen =16.6.....

Student Responses

In the next slides, we will look at some examples of responses to 5c

This question is about how the temperature changes recorded in an experiment vary when the same amount of magnesium is added to different volumes of acid



A candidate who did well

(c) The same amount of magnesium is added to 50 cm³ of dilute sulfuric acid.

Explain the effect this would have on the temperature change observed.

(2)

The temperature change would be less as there would be more solution to heat up.

A candidate who did less well

(c) The same amount of magnesium is added to 50 cm³ of dilute sulfuric acid.

Explain the effect this would have on the temperature change observed.

(2)

This would increase the temperature change because there would be more sulfuric acid particles to collide with the magnesium particles.

Why candidates failed to score in 5c

The specification statement being tested is

1.17 understand the use of the term mole to represent the amount of substance

in the context of

4.11 describe simple calorimetry experiments for reactions such as ... neutralisation ...

How can students be better prepared to answer questions like this?

Activity – mark this example of 5c

The same amount of magnesium is added to 50 cm³ of dilute sulfuric acid.

Explain the effect this would have on the temperature change observed.

(2)

there would be no effect on the temperature change because the acid was already in excess and therefore increasing the volume of acid has no effect.

Student Responses

In the next slides, we will look at some examples of responses to 6a ii

This question is about the effect of intermolecular forces on physical properties

A candidate who did well

(ii) Explain why hydrogen has a very low boiling point.

(2)

Although the hydrogen itself has a strong covalent bond, the hydrogen molecules are only held together by weak intermolecular forces of attraction which require very little energy to break.

A candidate who did less well

(ii) Explain why hydrogen has a very low boiling point.

(2)

Hydrogen has a very low boiling point because the inter-molecular forces between the two atoms are very weak, meaning only a small amount of energy is needed to break its bonds.

Why candidates failed to score in 6a(ii)

The specification statement being tested is

- 1.42 explain why substances with simple molecular structures have low melting and boiling points in terms of the relatively weak forces between the molecules

How can students be better prepared to answer questions like this?

Activity – mark this example of 6a(ii)

(ii) Explain why hydrogen has a very low boiling point.

(2)

because it has weak electrostatic
attractions so the bonds can be
broken easily.

Student Responses

In the next slides, we will look at some examples of responses to 6bi

This question is about the meaning of the term isotopes

A candidate who did well

(b) The symbols for the three isotopes of hydrogen are



(i) State what is meant by the term **isotopes**.

(2)

atoms of the same element but with
different amounts of neutrons.

A candidate who did less well

(b) The symbols for the three isotopes of hydrogen are

 ${}^1\text{H}$ ${}^2\text{H}$ ${}^3\text{H}$

(i) State what is meant by the term **isotopes**.

(2)

Isotopes have the same mass numbers but different atomic number therefore same number of protons different number of neutrons.

Why candidates failed to score in 6bi

The specification statement being tested is

1.11 understand the terms atomic number, mass number, isotopes ...

How can students be better prepared to answer questions like this?

Activity – mark this example of 6bi

(b) The symbols for the three isotopes of hydrogen are



(i) State what is meant by the term **isotopes**.

(2)

Isotopes are elements with the same number of protons but a different number of neutrons.

Student Responses

In the next slides, we will look at some examples of responses to 8c

This question is about calculating the mass of a product in a chemical reaction

A candidate who did well

(c) Calculate the maximum mass of water that could be collected when a sample of hydrated copper(II) sulfate of mass 2.50 g is heated.

[M_r of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is 250]

$$\text{mole} = \frac{2.5}{250} = 0.01$$

$$\text{mole H}_2\text{O} = 0.01 \times 5$$

$$\begin{aligned} \text{mass} &= 0.05 \times 18 \\ &= 0.9 \text{ g} \end{aligned}$$

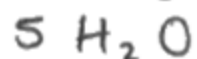
mass
mole M_r (3)

mass of water = 0.9 g

A candidate who did less well

- (c) Calculate the maximum mass of water that could be collected when a sample of hydrated copper(II) sulfate of mass 2.50 g is heated.

[M_r of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is 250]



(3)

$$\frac{2.50}{250}$$

$$0.01$$

$$0.01 \times (2 + 16)$$

$$= 0.18$$

mass of water = 0.18 g

Why candidates failed to score in 8c

The specification statement being tested is

1.19 carry out mole calculations using relative atomic mass and relative formula mass

in the context of

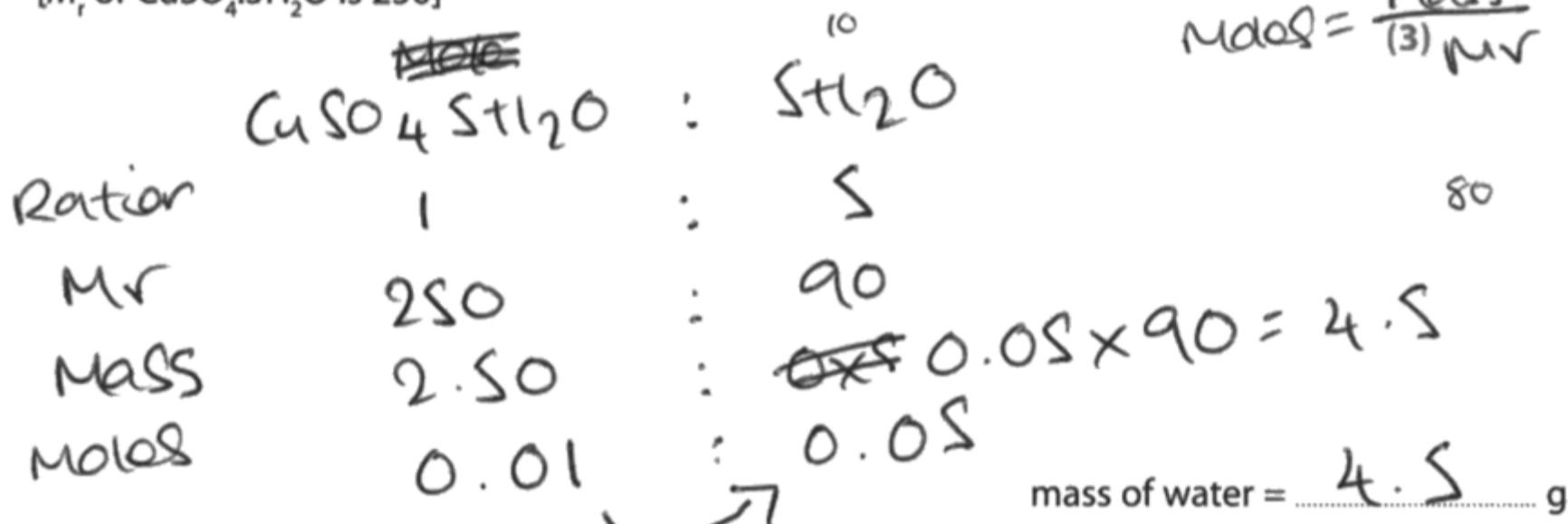
1.23 understand how the formulae of simple compounds can be obtained experimentally, including ... salts containing water of crystallisation

How can students be better prepared to answer questions like this?

Activity – mark this example of 8c

- (c) Calculate the maximum mass of water that could be collected when a sample of hydrated copper(II) sulfate of mass 2.50 g is heated.

[M_r of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is 250]



Student Responses

In the next slides, we will look at some examples of responses to 10b

This question is about the test for chloride ions

A candidate who did well

(b) Describe a test to show that dilute hydrochloric acid contains chloride ions.

(2)

By ~~the~~ ~~the~~ first mixing in Nitric Acid to rid of impurities, then adding silver nitrate solution, this would cause a ^{white} precipitate ~~a~~ to form if chloride ions are present.

A candidate who did less well

(b) Describe a test to show that dilute hydrochloric acid contains chloride ions.

(2)

Using silver nitrate in a test tube. If positive
~~a white precipitate forms~~ solution turns white

Why candidates failed to score in 10b

The specification statement being tested is

2.38i describe tests for the anions Cl^- ...

How can students be better prepared to answer questions like this?

Activity – mark this example of 10b

(b) Describe a test to show that dilute hydrochloric acid contains chloride ions.

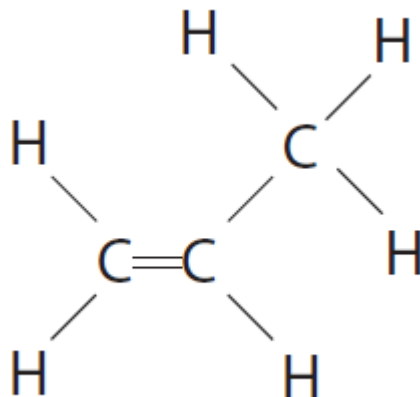
(2)

it will ~~react~~ with potassium to form a white precipitate.

Student Responses

In the next slides, we will look at some examples of responses to 11e

This question is about explaining why this compound is an unsaturated hydrocarbon:



A candidate who did well

(e) Z is an unsaturated hydrocarbon.

Explain what is meant by the term **unsaturated hydrocarbon**.

(3)

unsaturated means that the molecule contains a
..... carbon-carbon double bond

hydrocarbon means it is a compound that consists of
..... only ~~the~~ hydrogen and carbon atoms

A candidate who did less well

(e) Z is an unsaturated hydrocarbon.

Explain what is meant by the term **unsaturated hydrocarbon**.

unsaturated ~~It contains a double bond~~ It doesn't contain all ⁽³⁾
single bonds

hydrocarbon It is a compound constructed solely of hydrogen and
carbon

Why candidates failed to score in 11e

The specification statement being tested is

3.1 explain the terms ... hydrocarbon, ... unsaturated, ...

How can students be better prepared to answer questions like this?

Activity – mark this example of 11e

(e) Z is an unsaturated hydrocarbon.

Explain what is meant by the term **unsaturated hydrocarbon**.

(3)

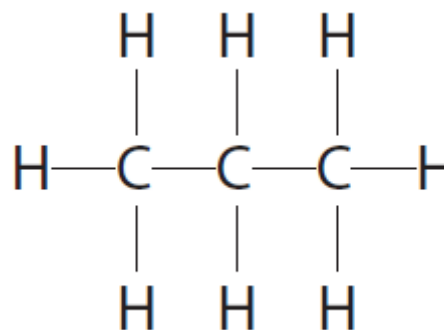
unsaturated something that contains a carbon-carbon
double bond

hydrocarbon contains both hydrogen and carbon
molecules

Student Responses

In the next slides, we will look at some examples of responses to 11fi

This question is about the displayed formula of the product of the reaction with bromine of

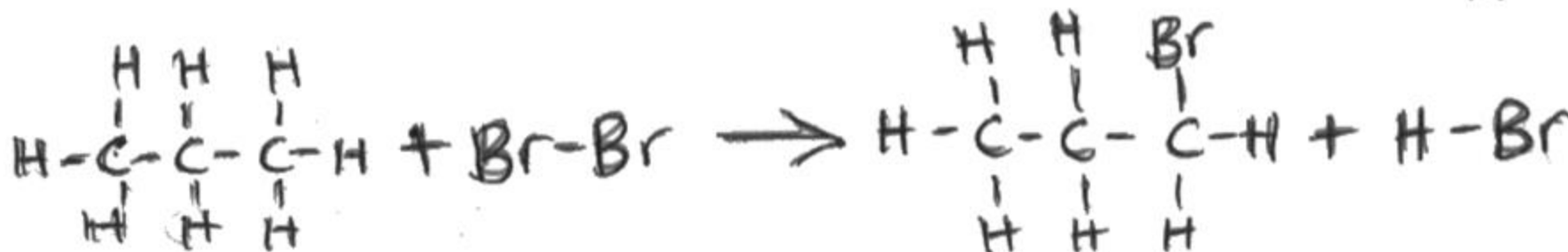


A candidate who did well

(f) (i) The substitution reaction between W and bromine is similar to the reaction between methane and bromine.

Suggest the displayed formula for a possible product of the reaction between W and bromine.

(1)

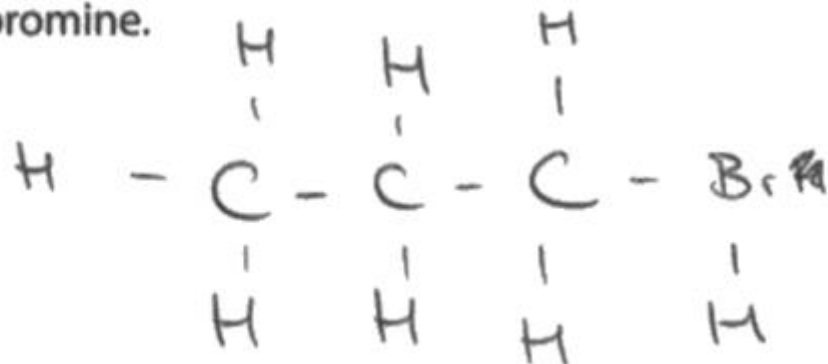


A candidate who did less well

- (f) (i) The substitution reaction between W and bromine is similar to the reaction between methane and bromine. $\text{W} = \text{propane}$.

CH_4

Suggest the displayed formula for a possible product of the reaction between W and bromine.



(1)

Why candidates failed to score in 11fi

The specification statement being tested is

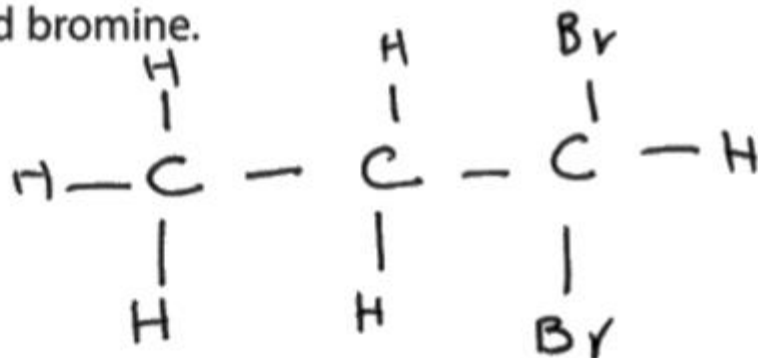
3.5 describe the substitution reaction of methane with bromine to form bromomethane in the presence of UV light

How can students be better prepared to answer questions like this?

Activity – mark this example of 11fi

- (f) (i) The substitution reaction between W and bromine is similar to the reaction between methane and bromine.

Suggest the displayed formula for a possible product of the reaction between W and bromine.



(1)

Student Responses

In the next slides, we will look at some examples of responses to 12a

This question is about calculating an empirical formula

A candidate who did well

(a) A titanium ore contains the composition by mass

$$\text{Fe} = 36.8\%$$

$$\text{Ti} = 31.6\%$$

$$\text{O} = 31.6\%$$

Show by calculation that the empirical formula of this ore is FeTiO_3

(3)

<u>Fe</u>	<u>Ti</u>	<u>O</u>	
<u>36.8</u>	<u>31.6</u>	<u>31.6</u>	
56	48	16	
$= \frac{0.657}{0.657}$	$\frac{0.658}{0.657}$	$\frac{1.975}{1.975}$	
= 1	= 1	= 3	= <u>FeTiO_3</u>

A candidate who did less well

(a) A titanium ore contains the composition by mass

$$\text{Fe} = 36.8\% \quad \text{Ti} = 31.6\% \quad \text{O} = 31.6\%$$

Show by calculation that the empirical formula of this ore is FeTiO_3

$$\begin{array}{ccc}
 \frac{36.8\text{g}}{56} & \frac{31.6\text{g}}{48} & \frac{31.6\text{g}}{16} \\
 = 0.6 \times 10 & = & = 2 \\
 = \frac{6}{2} & = \frac{6}{2} & = \frac{2}{2} \\
 = 3 & = 3 & = 1
 \end{array}$$

Why candidates failed to score in 12a

The specification statement being tested is

1.24 calculate empirical and molecular formulae from experimental data

How can students be better prepared to answer questions like this?

Activity – mark this example of 12a

(a) A titanium ore contains the composition by mass

$$\text{Fe} = 36.8\%$$

$$\text{Ti} = 31.6\%$$

$$\text{O} = 31.6\%$$

Show by calculation that the empirical formula of this ore is FeTiO_3

(3)

Fe	Ti	O
36.8	31.6	31.6
<hr/>	<hr/>	<hr/>
56	48	16
 = 0.6571	 = 0.6571	 = 2.256
0.6571	0.6571	0.6571
0.6571	0.6571	0.6571
0.6571	0.6571	0.6571
 = 1.00	 = 1.14	 = 3.43
 ≈ 1	 ≈ 1	 ≈ 3
	FeTiO_3	

Student Responses

In the next slides, we will look at some examples of responses to 12di

This question is about metallic bonding

A candidate who did well

(d) (i) Describe the bonding in titanium metal.

are metallicly bonded and (2)

Titanium ~~part~~ molecules are arranged in a regular
structure of positive ions surrounded by a sea of
delocalised electrons

A candidate who did less well

(d) (i) Describe the bonding in titanium metal.

(2)

There are fixed metal ions which are positively charged. They are surrounded by a sea of electrons.

Why candidates failed to score in 12di

The specification statement being tested is

- 1.46 understand that a metal can be described as a giant structure of positive ions surrounded by a sea of delocalised electrons

How can students be better prepared to answer questions like this?

Activity – mark this example of 12di

(d) (i) Describe the bonding in titanium metal.

(2)

There are very strong electrostatic
attraction between them.

Student Responses

In the next slides, we will look at some examples of responses to 16cii

This question is about using the particle collision theory to explain changes in the rate of the reaction between calcium carbonate lumps and dilute hydrochloric acid

A candidate who did well

- (ii) Explain, using the particle collision theory, how the rate of reaction changes with an increase in concentration of hydrochloric acid.

(3)

There are more HCL particles for the CaCO_3 particles to collide with so the rate of reaction will increase as there are more collisions per second.

A candidate who did less well

- (ii) Explain, using the particle collision theory, how the rate of reaction changes with an increase in concentration of hydrochloric acid.

(3)

The rate of reaction increases as there are more reactants, so there are more successful collisions meaning ~~the~~ the reaction occurs at a faster rate.

Why candidates failed to score in 16cii

The specification statement being tested is

4.20 explain the effects of changes in ... concentration of solutions ... on the rate of a reaction in terms of the particle collision theory

How can students be better prepared to answer questions like this?

Activity – mark this example of 16cii

- (ii) Explain, using the particle collision theory, how the rate of reaction changes with an increase in concentration of hydrochloric acid.

(3)

An increase in concentration of hydrochloric acid means that there are more particles of hydrochloric acid which means there is an increased frequency in collisions between the particles of the two substances. Therefore more successful collisions take place, increasing the rate of reaction.

Common Issues

Here are some common causes of failing to score high marks in chemistry examinations at this level:

1. Not understanding the command word used
2. Not considering the number of marks and answer lines allocated to a question part
3. Partial understanding of a topic and the resulting tendency to include contradictory information in an answer
4. Incorrect use of technical vocabulary
5. Not having sufficient experience of practical work

Session 3

Here are some things to consider in this afternoon's session:

- What information is available on the Edexcel website?
- What resources are available from other websites?
- What published resources are available and suitable?
- What is your preferred order of teaching the course?
- How much practical work do your students do?
- Are there any strategies that can be used to improve students' learning experience in certain topics?

The new website

Although websites containing the name 'Edexcel' still exist, the address of the main public website is now

qualifications.pearson.com

although it can still be accessed via www.edexcel.com

Accessing the new website

Select 'Our qualifications',
then 'International GCSEs and Edexcel Certs'

Scroll down and select Chemistry (2011)

You then see these four tabs:

Edexcel International GCSE
Chemistry (2011)

Specification

Course materials

Published resources

News

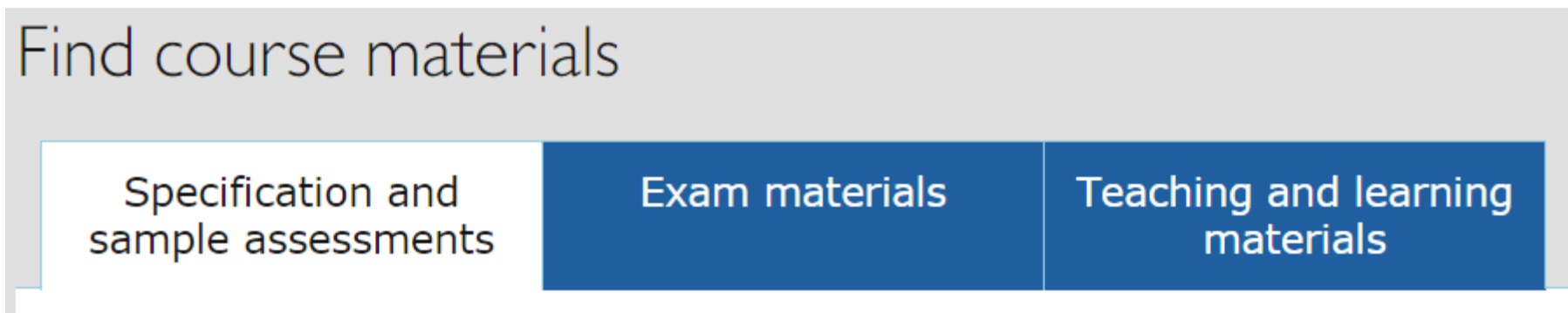
Website - Specification

This allows you to download the latest version of the specification – it has a green cover and 'Issue 5' on p2

It also contains sample question papers and mark schemes for 1C and 2C

Website – Course materials 1

Here you will find these tabs:



Selecting 'Exam materials' gives access to all question papers, mark schemes and examiner reports from January 2012 onwards.

Website – Course materials 2

Selecting 'Teaching and learning materials' contains a few documents – the most useful are:

- Teacher's guide, containing command words, outline course planner and a lot of advice on practical work
- Scheme of work, very detailed and with all the assessment statements included, along with suggestions for practical work and resources

Website – other tabs

‘Published resources’ gives details of suitable textbooks

‘News’ gives latest announcements about the specification

Websites from other organisations

The Teacher's Guide just mentioned has a list of useful websites, but it was published over 7 years ago!

Just a couple of recommended ones:

Royal Society of Chemistry

www.rsc.org

The Association for Science Education

www.schoolscience.co.uk

Royal Society of Chemistry website

Some parts of the website can only be accessed by members

Much is freely accessible – start by clicking on the 'Resources and Tools' link, then 'Learn chemistry'

You can choose 'Teacher' or 'Student' from 'Select audience' and from 'Select age group' pick 14-16 years

You can choose a 'Resource type' such as video or experiment and refine your search further

Royal Society of Chemistry tutorial

Look at one example online of a freely downloadable resource
– a tutorial called 'Carbon – the element with several identities'

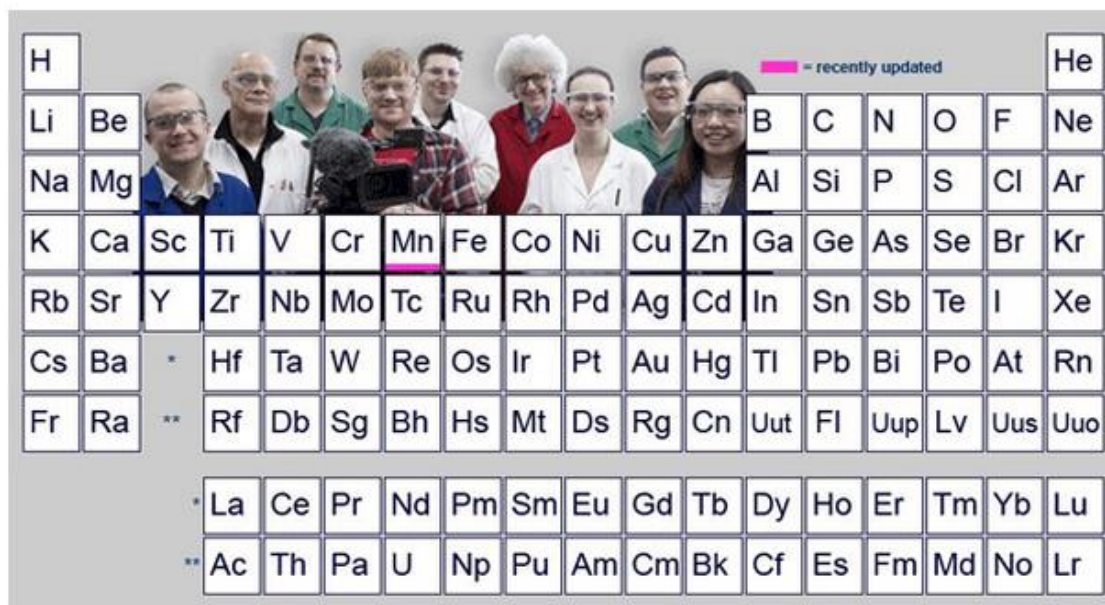
The handout meant for students is in your pack
The tutorial contains 2 further pages to give guidance to teachers about how to use it – including answers to the questions

There are many more such resources!

ASE website

The website www.schoolscience.co.uk contains much free material

Choose 'Ages 14-16'
then 'Chemistry'
then 'Periodicity'
then 'Periodic videos'



Legend: = recently updated

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	*	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	**	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo
			* La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
			** Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Clicking on one of the elements accesses a short video about that element – your students can do this via YouTube

Activity 4 – course planning

A chance to discuss together issues to do with course planning and time management

Look at the handouts and consider the suggested course planner and the accompanying questions
Include other questions if you wish!

Some extracts about practical work are included from the Teacher's Guide – these form part of the activity

We will then have a discussion of these issues

Activity 5 – A difficult topic for students -

You will all have experienced difficulties in getting your students to understand certain topics

The last part of this session considers one area that so often results in low marks in exam answers:

BONDING

and

STRUCTURE

Plenary

Opportunity to ask questions on any part of today's event

Opportunity to share any other good practice and recommend resources

For more information, please contact subject advisors, subjects pages/communities and ask the expert

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The new specification - 1

The purpose of today's event has been to consider the current (4CH0) specification – last examination in January 2019

There will be training events for the new (CH1) specification – first examination in Summer 2019

The website has the new specification and sample assessment material

More resources will be added in the near future, including a revised Scheme of Work

The new specification - 2

What is not changing:

- Chemistry and Double Award specifications still available
- Paper 1 and 2 (Paper 2 for Chemistry candidates)
- Question types
- Most content still familiar, with only minor wording changes

A summary of changes can be found on the [website](#):

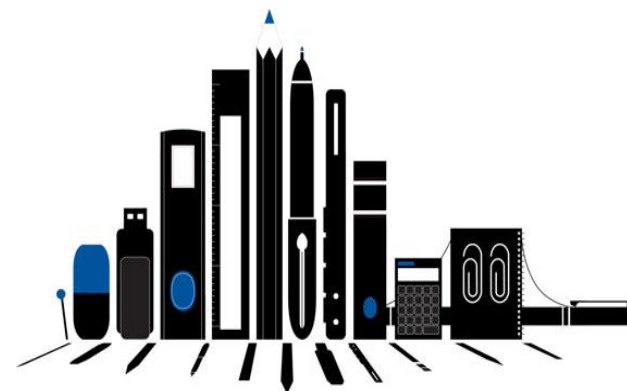
- New Single Award specification
- Grading system from 9 (highest grade) to 1
- Paper 1 now 110 marks, Paper 2 now 70 marks
- Some assessment statements replaced
- Four sections instead of five

If you would like to know more about examination statistics, you may find these links of interest to you.

Examination Results Statistics

<http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-statistics.html>

Results statistics summarise the overall grade outcomes of candidates sitting Edexcel examinations.



Grade Boundaries

<http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html/teacher.html>

This page shows the minimum marks needed to achieve a certain grade for all UK and international examinations.

Also refer to the examiners report which is available for download with other documents.

Statistics continued

ResultsPlus

<http://qualifications.pearson.com/en/support/Services/ResultsPlus.html>

- Edexcel's free online service giving instant and detailed analysis of your students' exam and mock performance
- see your students' scores for every exam question
- understand how your students' performance compares with Edexcel national averages



Training

Wide range of training events

- General Qualifications
- Vocational Qualifications

Audience

- UK
- International

Choice of Delivery methods to suit you and your centre

- F2F
- Online
- Centre-based

More information

<http://qualifications.pearson.com/en/support/training-from-pearson-uk.html>

WHAT OTHER TRAINING WOULD YOU FIND USEFUL?



Thank you

We constantly look to improve the training we provide

Please let us know what you thought of the training by completing our **online feedback form** for the opportunity to win a **£100 Amazon.co.uk Gift Card**.