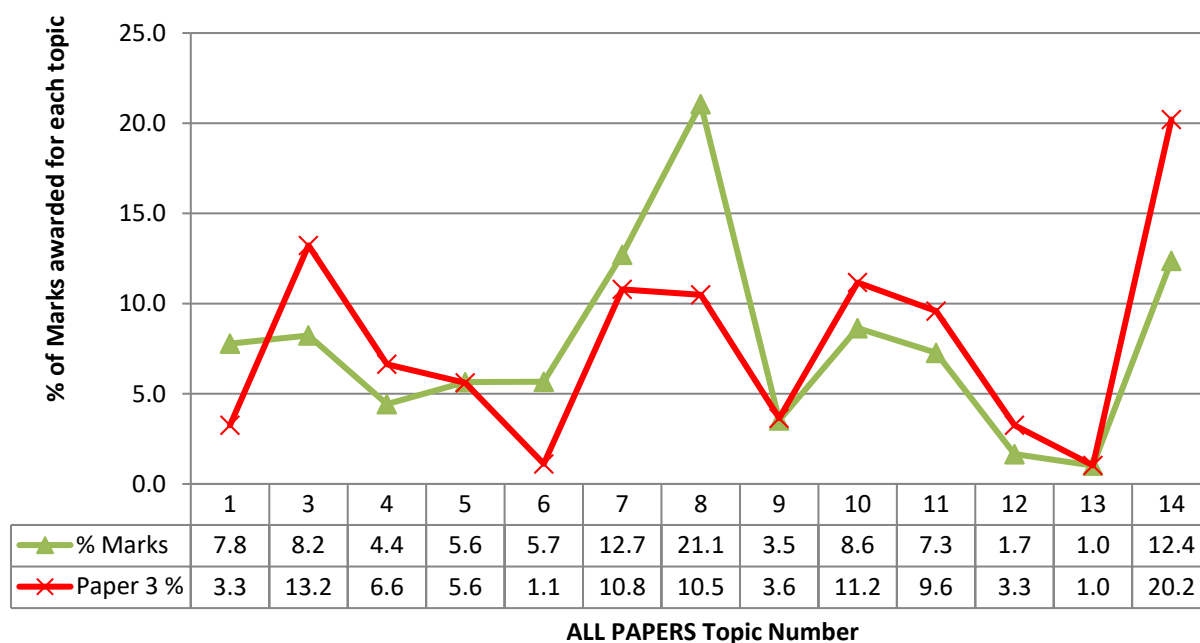


## iG Chem 9 EQ P3 15w to 01s 4Teachers NEW 85marks

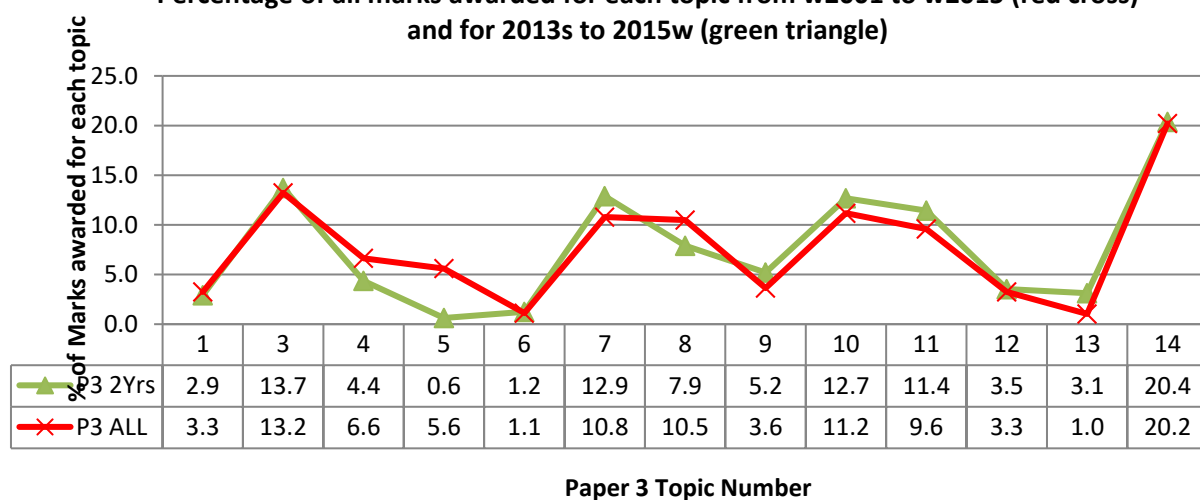
## PAPERS 1, 3 and 6

Percentage of all WEIGHTED marks awarded for each topic from w2001 to w2015 (green) and % of Paper 3 marks (red)



## PAPER 3

Percentage of all marks awarded for each topic from w2001 to w2015 (red cross) and for 2013s to 2015w (green triangle)



	Total	Che m 1	Che m 3	Che m 4	Che m 5	Che m 6	Che m 7	Che m 8	Che m 9	Che m 10	Che m 11	Che m 12	Che m 13	Che m 14
Total Marks	2320	74	312	155	81	26	256	246	85	296	231	76	24	474
% of Marks	2336	3.2	13.4	6.6	3.5	1.1	11.0	10.5	3.6	12.7	9.9	3.3	1.0	20.3
# of Questions		19	59	39	18	6	47	54	19	58	48	14	5	80
Average marks per Q		3.9	5.3	4.0	4.5	4.3	5.4	4.6	4.5	5.1	4.8	5.4	4.8	5.9



	1st Paper	1st P rank	Last Paper	Last P rank	Total # Papers	Marks/ paper	Theor. All Papers	Actual All Marks	Difference	Weight per paper	Weight per mark
Paper 1	2002s	5	2012w	26	22	40	880	869	-11	30	0.75
Paper 3	2001w	4	2015w	32	29	80	2320	2336	16	50	0.625
Paper 6	2001w	4	2015w	32	29	60	1740	1890	150	20	0.625

Topic	14	3	10	7	8	11	4	5	9	1	12	6	13
Rank ALL Papers	2	4	5	3	1	6	9	8	11	7	12	10	13
Rank P3: A* Focus	1	2	3	4	5	6	7	8	9	10	10	12	13
All Syllabus Word Count RANK	1	2	5	3	6	4	9	7	10	8	12	11	13

## CIE iGCSE Chemistry Syllabus Details

(syllabus code 0620)

The core material is examined in all three exam papers (papers 1,3 and 6) and is intended to assess understanding up to a grade C level. From 2016, the Supplement material is **examined in all three papers**, however, before 2016 papers 1 and 6 did not contain any Supplement material. If the number of marks that can be awarded above a C grade will remain the same, in practice this means that:

1. Paper 3 will contain fewer Supplement marks, so more core marks so will be easier (if you can answer the Paper 3 questions from before 2016 then you will be fine)
2. Papers 1 and 3 will contain Supplement marks, unlike in all papers before 2016, so will assess material they have not done before, so will be harder because of the questions and as there are no previous questions to practice on, will be harder because of the newness.

Material that is new or changed in 2016 is highlighted with BLACK LINES next to it.

9. The Periodic Table	
9.1 The Periodic Table <b>Core</b> <ul style="list-style-type: none"> <li>Describe the Periodic Table as a method of classifying elements and its use to predict properties of elements</li> </ul>	
9.2 Periodic trends <b>Core</b> <ul style="list-style-type: none"> <li>Describe the change from metallic to non-metallic character across a period</li> </ul>	<b>Supplement</b> <ul style="list-style-type: none"> <li>Describe and explain the relationship between Group number, number of outer shell electrons and metallic/non-metallic character</li> </ul>
9.3 Group properties <b>Core</b> <ul style="list-style-type: none"> <li>Describe lithium, sodium and potassium in Group I as a collection of relatively soft metals showing a trend in melting point, density and reaction with water</li> <li>Predict the properties of other elements in Group I, given data, where appropriate</li> <li>Describe the halogens, chlorine, bromine and iodine in Group VII, as a collection of diatomic non-metals showing a trend in colour and density and state their reaction with other halide ions</li> <li>Predict the properties of other elements in Group VII, given data where appropriate</li> </ul>	<b>Supplement</b> <ul style="list-style-type: none"> <li>Identify trends in Groups, given information about the elements concerned</li> </ul>
9.4 Transition elements <b>Core</b> <ul style="list-style-type: none"> <li>Describe the transition elements as a collection of metals having high densities, high melting points and forming coloured compounds, and which, as elements and compounds, often act as catalysts</li> </ul>	<b>Supplement</b> <ul style="list-style-type: none"> <li>Know that transition elements have variable oxidation states</li> </ul>



### 9.5 Noble gases

#### Core

- Describe the noble gases, in Group VIII or 0, as being unreactive, monoatomic gases and explain this in terms of electronic structure
- State the uses of the noble gases in providing an inert atmosphere, i.e. argon in lamps, helium for filling balloons

### Flame tests for metal ions

metal ion	flame colour
lithium ( $\text{Li}^+$ )	red
sodium ( $\text{Na}^+$ )	yellow
potassium ( $\text{K}^+$ )	lilac
copper(II) ( $\text{Cu}^{2+}$ )	blue-green

Q# 1/ IGCSE Chemistry/2009/s/Paper 31/

3 The following is a list of the electron distributions of atoms of unknown elements.

element	electron distribution
A	2,5
B	2,8,4
C	2,8,8,2
D	2,8,18,8
E	2,8,18,8,1
F	2,8,18,18,7

(a) Choose an element from the list for each of the following descriptions.

(i) It is a noble gas.

.....

(ii) It is a soft metal with a low density.

.....

(iii) It can form a covalent compound with element A.

.....

(iv) It has a giant covalent structure similar to diamond.

.....

(v) It can form a negative ion of the type  $\text{X}^{3-}$ .

..... [5]



- 1 For each of the following select an element from Period 4, potassium to krypton, that matches the description.

- (a) It is a brown liquid at room temperature. ....
- (b) It forms a compound with hydrogen having the formula  $\text{XH}_4$ . ....
- (c) A metal that reacts violently with cold water. ....
- (d) It has a complete outer energy level. ....
- (e) It has oxidation states of 2 and 3 only. ....
- (f) It can form an ion of the type  $\text{X}^-$ . ....

[6]

- 4 Use your copy of the periodic table to help you answer these questions.

- (d) Potassium and vanadium are elements in Period IV.

- (i) State **two** differences in their physical properties.

.....  
..... [2]

- (ii) Give **two** differences in their chemical properties.

.....  
..... [2]

- (e) Fluorine and astatine are halogens. Use your knowledge of the other halogens to predict the following:

- (i) The physical state of fluorine at r.t.p. ....

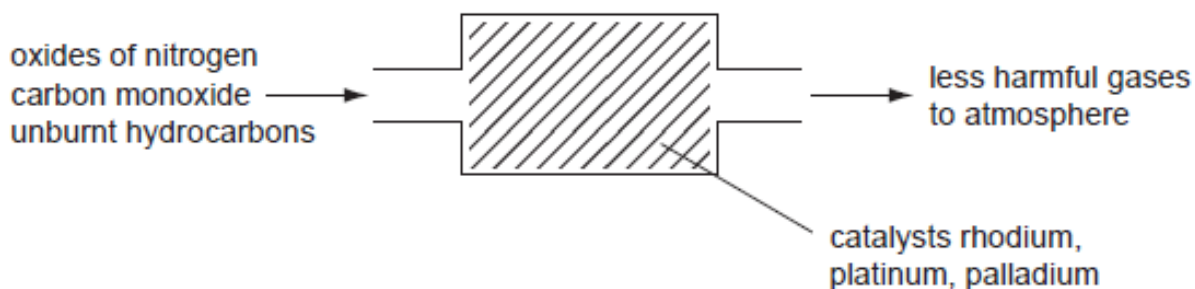
The physical state of astatine at r.t.p. .... [2]

- (ii) **Two** similarities in their chemical properties

.....  
..... [2]



- (c) Catalytic converters reduce pollution from motor vehicles, as shown in the following diagram.



- (i) What type of elements are the metals rhodium, platinum and palladium?

[1]

- 1 Iron is a transition element.

- (a) Which of the following statements about transition elements are correct?

Tick **three** boxes.

The metals are highly coloured e.g. yellow, green, blue.

☐

The metals have low melting points.

☐

Their compounds are highly coloured.

☐

Their compounds are colourless.

☐

The elements and their compounds are often used as catalysts.

☐

They have more than one oxidation state.

☐

[3]

- (b) (i) In which Period in the Periodic Table is iron to be found?

[1]



1 Three of the halogens in Group VII are:

chlorine  
bromine  
iodine

(a) (i) How does their colour change down the Group?

..... [1]

(ii) How does their physical state (solid, liquid or gas) change down the Group?

..... [1]

(iii) Predict the colour and physical state of fluorine.

colour .....

physical state ..... [2]

(b) Describe how you could distinguish between aqueous potassium bromide and aqueous potassium iodide.

test .....

result with bromide .....

result with iodide ..... [3]

5 The first three elements in Period 6 of the Periodic Table of the Elements are caesium, barium and lanthanum.

(a) How many **more** protons, electrons and neutrons are there in one atom of lanthanum than in one atom of caesium. Use your copy of the Periodic Table of the Elements to help you.

number of protons .....

number of electrons .....

number of neutrons ..... [3]

(c) Choose a different element from Period 3 that matches each description.

(i) It has a similar structure to diamond.

.....[1]





(d) The only oxidation state of argon is zero. Why it is used to fill light bulbs?

.....  
.....[1]

Q# 9/ iGCSE Chemistry/2002/w/Paper 3/

2 Manganese is a transition element. It has more than one valency and the metal and its compounds are catalysts.

(a) (i) Predict **three** other properties of manganese that are typical of transition elements.

.....  
.....[3]

Q# 10/ iGCSE Chemistry/2002/s/Paper 3/

4 Bromine is one of the halogens in Group VII.

(a) (i) Predict which halogen has the lightest colour.

.....[1]

(ii) Predict which halogens are solids at room temperature.

.....[1]

## Mark Scheme

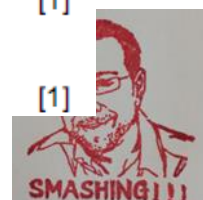
Q# 1/ iGCSE Chemistry/2009/s/Paper 31/

- |              |     |
|--------------|-----|
| 3 (a) (i) D  | [1] |
| (ii) E       | [1] |
| (iii) B or F | [1] |
| (iv) B       | [1] |
| (v) A        | [1] |

Q# 2/ iGCSE Chemistry/2008/s/Paper 31/

An incorrectly written symbol, e.g. NA or CL, should be penalised once in a question.

- |                          |     |
|--------------------------|-----|
| 1 (a) bromine            | [1] |
| (b) germanium            | [1] |
| (c) potassium or calcium | [1] |
| (d) krypton              | [1] |
| (e) iron or cobalt       | [1] |
| (f) bromine              | [1] |



Q# 3/ iGCSE Chemistry/2007/s/Paper 3/ Q4

- (d) (i) ignore a correct chemical property in (i)  
vanadium harder  
vanadium higher melting point or boiling point  
vanadium higher density  
**ANY TWO** [2]  
**OR** corresponding statements for potassium  
NB has to be comparison

- (ii) ignore a correct physical property in (ii)  
potassium more reactive or example of different reactivities-  
potassium reacts with cold water, vanadium does not.  
potassium one oxidation state, vanadium more than one  
vanadium coloured compounds, potassium white or colourless  
vanadium and its compounds catalysts, not potassium  
**ANY TWO** [2]  
NB has to be comment about both elements

- (e) (i) fluorine gas [1]  
astatine solid [1]

- (ii) both have valency of one  
both can react with other elements to form halides  
both are oxidants  
or any correct Chemistry – they both form acidic hydrides  
both have diatomic molecules  
both accept one electron or form ion  $X^-$   
both have seven valency electrons  
both react with non-metals to form covalent compounds  
both react with metals to form ionic compounds  
both form acidic oxides  
**NOT** have a valency of 7  
**ANY TWO** [2]

Q# 4/ iGCSE Chemistry/2006/w/Paper 3/ Q4

- (c) (i) Transition elements/metals or d block elements [1]

Q# 5/ iGCSE Chemistry/2006/s/Paper 3/

- 1 (a) compounds are highly coloured [1]  
used as catalysts [1]  
more than one oxidation state [1]  
Four boxes ticked that include three correct choices [2]  
Four boxes ticked that include two correct choices [1]  
Four boxes ticked that include one correct choices [0]  
Five boxes ticked [0]

- (b) (i) period 4 [1]





Q# 6/ IGCSE Chemistry/2005/s/Paper 3/

1 (a) (i) darker **or** actual colours [1]  
chlorine yellow, yellow/green  
bromine orange, brown, brownish red  
iodine black grey, purple

(ii) gas, liquid, solid [1]  
all three needed

(iii) colourless **or** (pale) yellow [1]  
gas [1]

(b) Must have a correct reagent otherwise wc = 0

add chlorine water **or** bubble in chlorine gas [1]

yellow **or** orange **or** brown [1]

dark brown **or** grey crystals [1]  
(**Accept** colour that is darker than for bromide)

**OR** add (acidified) silver nitrate(aq) [1]

off white **or** pale yellow **or** cream precipitate **or** soluble in aqueous ammonia [1]

yellow precipitate insoluble in aqueous ammonia [1]

precipitate essential then either colour **or** solubility in aqueous ammonia

**OR** add lead nitrate(aq) [1]

pale yellow **or** off white **or** cream precipitate [1]

yellow precipitate insoluble in aqueous ammonia [1]

**Accept** any test that could work – electrolysis, iron(III) salt  
bromine, potassium dichromate, potassium manganate(VII) etc.

Q# 7/ IGCSE Chemistry/2003/s/Paper 3/

5 (a) protons 2  
electrons 2  
neutrons 4 [3]

Q# 8/ IGCSE Chemistry/2002/w/Paper 3/ Q3

(c) (i) silicon [1]

(ii) sodium [1]

(iii) sulphur or chlorine [1]

(d) unreactive **or** inert or does not react [1]

Q# 9/ IGCSE Chemistry/2002/w/Paper 3/

2 (a) (i) high densities  
high fixed points mp or bp  
coloured compounds  
hardness  
complex ions  
ANY three [3]

Q# 10/ IGCSE Chemistry/2002/s/Paper 3/

4 (a) (i) fluorine [1]

(ii) iodine and astatine [1]

