

# Assessment in IGCSE Chemistry 0620

## Session 3: Handout 3.5(a)

### Mark schemes

*In your own time look at the scripts you have been given. Mark them according to the mark schemes below.*

#### Paper 2 (for use with Script B)

- Question 3:** (a)(i) evaporation/ vaporisation/ boiling (1)  
(ii) freezing/ solidification (1)  
NOT: fusion  
(iii)condensing/ condensation/liquefaction (1)  
(b) 2<sup>nd</sup> box ticked (1)  
(c) A: (1)  
energy needed to overcome forces between molecules/ idea of energy input/ taking in heat (1)  
(d)(i) chlorine (1)  
(ii) bromine (1)  
(iii)sodium chloride (1)  
(e)(i) diffusion  
NOT: Brownian motion (1)  
(ii) ammonium chloride (1)  
(iii)ammonia diffuses or moves faster/ HCl diffuses or moves slower/  
ammonia has lower mass/ HCl has higher mass/ molecules of ammonia and HCl move at different speeds  
NOT: ammonia evaporates faster/ HCl evaporates slower (1)  
(f) neutralization/ acid-base (1)  
NOT: exothermic/ addition  
(g)(i) thermometer (1)  
(ii) reference to solid or melting point of solid needed for mark  
boiling point of water too low to get solid to melt/ boiling water cannot get to 155°C  
(iii) So liquid is the same temperature throughout/ so the tube is the same temperature as the thermometer/ so heat is spread out evenly  
NOT: to keep temperature constant
- Question 6:** (a) potassium/magnesium/aluminium (1)  
(b) they did not have electricity/ did not know about electrolysis (1)  
(c)(i) indication that bubbles produced rapidly or quickly / slower than magnesium but faster than zinc; (1)  
uranium dissolved slower than magnesium but faster than zinc or words to that effect (1)  
(ii) atoms of same element with different mass number/ different neutron number/ different nucleon number  
NOT: compounds with different mass number (1)  
(iii) for energy/ nuclear energy  
ALLOW: nuclear bombs  
NOT: curing cancer NOT: for fuel  
(d) magnesium oxide ALLOW: MgO (1)  
(e)(i) idea of mixture of metals (1)  
(ii) alloys stronger/ harder/ decreased malleability/ increased toughness/  
increased corrosion resistance/ heat or electrical resistance increased (1)  
NOT: increase in melting point/ cheaper/ improving properties  
(f) removes oxygen from zinc oxide (1)

ALLOW: definition in terms of oxidation number changes/ electron transfer

- (g)(i) reversible reaction ALLOW: equilibrium (1)  
(ii) 76-80% (1)

**Paper 3 (for use with Script C and Script D)**

- Question 3:** (a)(i) correct equation (2)  
 correct formula of alkane and alkene (1 only)  
 ACCEPT: alkene + hydrogen
- (ii) chlorine (1)  
 CONDITIONAL: light or 200°C or heat or lead tetraethyl (1)
- (b)(i) same molecular formula (1)  
 different structures or structural formulae (1)
- (ii) but-2-ene or cyclobutene (1)  
 corresponding structural formula NOT: but-2-ene (1)
- (c) butanol IGNORE: numbers (1)  
 butane IGNORE: numbers (1)  
 dibromobutane numbers (1)
- (d)(i) propene (1)  
 $\text{CH}_3\text{-CH=CH}_2$
- (ii) correct structure of repeat unit (1)  
 IGNORE: point of attachment of ester group  
 CONDITIONAL ON REPEAT UNIT: shows continuation (1)  
 if chain through ester group = 0/2
- (iii) ANY 2 of do not decay or non-biodegradable:  
 shortage of sites or amount of waste per year  
 visual pollution  
 forms methane (2)
- (iv) forms poisonous gases or named gas CO/ HCl/ HCN (1)  
 NOT: carbon dioxide/ harmful/ sulphur dioxide

- Question 4:** (a)(i) correct equation (2)  
 not balanced = 1 only  
 $2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$  (or halved amounts)
- (ii) potassium nitrate  $\rightarrow$  potassium nitrite + oxygen (1)
- (b)(i) closely/ tightly packed (1)  
 ordered / lattice (1)  
 vibrational NOT: forces (1)
- (ii) melting/ freezing/ solidification
- (c)(i) oxygen and nitrogen (1)  
 react at high temperature (and pressure) (1)  
 IF: nitrogen in fuel =0
- (ii) any two from: (2)  
 catalytic converter;  
 react with carbon monoxide / hydrocarbons  
 form nitrogen
- (d) add excess lead oxide to nitric acid (1)  
 filter NOT: if residue is lead nitrate (!)  
 evaporate/ heat solution (1)

**Paper 6 (for use with Script F)**

**Question 4:** (a) bubbles/ fizzes / calcium gets smaller/ water turns cloudy  
NOT: calcium dissolves  
(b) the gas given off moves the pieces  
(c) greater than 7

**Question 5:** Table completed experiment 1 24.9 difference 24.9 (1)  
experiment 2 12.5 difference 12.5 (1)

- (a)(i) experiment 1 (1)
- (ii) more in experiment 1 (1)  
twice as much / double the volume for experiment 2 (1)
- (iii) solution B 2X as concentrated as A (1)
- (iv) 25.0 (1) cm<sup>3</sup> (1) error carried forward for volume
- (b) iron(III) (1)  
brown precipitate
- (c) use burette/ pipette to measure the volume of the iron(ii) solution (1)  
NOT: use syringe  
more accurate (1)

## Assessment in IGCSE Chemistry 0620

### Session 3: Handout 3.5(b)

#### Marking candidates' scripts

Compare your marks for scripts B, C, D and F with the Examiner's marks given below. If there are any differences between your mark and the Examiner's, try to work out what the differences are.

The scripts you have are from Papers 2, 3 and 6. The marks given by the Examiner are shown below.

Paper Number	Script reference	Question number	Sub-question number	Mark awarded
<b>2</b>	<b>B</b>	<b>3</b>	(a)(i)	1
			(a)(ii)	1
			(a)(iii)	0
			(b)	0
			(c)	1;0
			(d)(i)	0
			(d)(ii)	0
			(d)(iii)	1
			(e)(i)	0
			(e)(ii)	0
			(e)(iii)	0
			(f)	0
			(g)(i)	0
			(g)(ii)	1
			(g)(iii)	0
			(h)(i)	
			(h)(ii)	
<b>2</b>	<b>B</b>	<b>6</b>	(a)	0
			(b)	0
			(c)(i)	1;0
			(c)(ii)	0
			(c)(iii)	1
			(d)	1
			(e)(i)	0
			(e)(ii)	0;0
			(f)	0
			(g)(i)	1
			(g)(ii)	1
			(h)(i)	1
			(h)(ii)	0

Paper Number	Script reference	Question number	Sub-question number	Mark awarded
<b>3</b>	<b>C</b>	<b>3</b>	(a)(i)	0;0
			(a)(ii)	1;1
			(b)(i)	1;1
			(b)(ii)	0;0
			(c)	1;1;1
			(d)(i)	1;1
			(d)(ii)	0;0
			(d)(iii)	1;1 (on next question)
<b>3</b>	<b>C</b>	<b>4</b>	(a)(i)	2
			(a)(ii)	1
			(b)(i)	2
			(b)(ii)	1
			(c)(i)	2
			(c)(ii)	2
			(d)	1
<b>3</b>	<b>D</b>	<b>4</b>	(a)(i)	0;0
			(a)(ii)	0
			(b)(i)	1;0
			(b)(ii)	1
			(c)(i)	0;0
			(c)(ii)	0;0
			(d)	0;0;0
<b>6</b>	<b>F</b>	<b>4</b>	(a)	1
			(b)	0
			(c)	1
<b>6</b>	<b>F</b>	<b>5</b>	Table	0;1
			(a)(i)	0
			(a)(ii)	0;0
			(a)(iii)	0
			(a)(iv)	1;1
			(b)	0;0
			(c)	0;0

## Assessment in IGCSE Chemistry 0620

### Session 3: Handout 3.7

#### Identifying student errors

Look at the Examiner Report that you have been given.

Find as many cases of the following as you can and write down what these are.

- Cases where candidates misread the question
- Incorrect reference or lack of reference to the stem of a question
- Incorrect extraction of information from a table
- Errors in writing equations
- Advice for future candidates
- Careless use of words (which may result in candidates being penalised)
- Poor quality of diagrams
- Misconceptions or other problems which arise year after year

Now answer the following questions:

(1) Do all members in your department have copies or have access to the Examiner Report? (Copies can be downloaded from the Teacher Support website.)

(2) Can any of these misconceptions arise from the way you teach the topics?

(3) Do you use the Examiner Report to inform students of common mistakes/ areas where misconceptions occur?

- If not, how and when could you use this information to help students?

(4) Are any of these misconceptions applicable to particular levels of student ability e.g. grade D/E, grade A/B?

- If so, what can you do to deal with these misconceptions?

(5) Is it possible to use information in the Examiner Report to improve student performance in earlier years than the examination year?

(6) How do you ensure that your students are able to extract information and are able to draw suitable diagrams?

(7) To what extent could you incorporate the information from the Examiner Report into your scheme of work?