Oxford Cambridge and RSA

A level Chemistry A

H432/01 Periodic table, elements and physical chemistry

Question Set 21

Multiple choice questions

Foundations in chemistry

1. Which atom is **not** an isotope of iodine?

	Number of neutrons	Mass number
A	72	125
B	74	127
C	75	128
D	77	129

Your answer ☐

[1]

2. What is the oxidation number of Mn in K_2MnO_4?

A +4

B +5

C +6

D +7

Your answer ☐

[1]

3. Which calcium compound contains the **greatest** percentage by mass of calcium?

A calcium carbonate

B calcium nitrate

C calcium hydroxide

D calcium sulfate

Your answer ☐

[1]

4. 0.0200 mol of calcium oxide is reacted completely with 2.00 mol dm^{-3} HC*l*.

What is the volume, in cm^3, of 2.00 mol dm^{-3} HC*l* required for this reaction?

A 15

B 20

C 30

D 60 **[1]**

Your answer

5. Silicon can be made by heating silicon tetrachloride, $SiCl_4$, with zinc.

$$SiCl_4 + 2Zn \rightarrow Si + 2ZnCl_2$$

8.50 g of $SiCl_4$ is reacted with an excess of zinc. The percentage yield of silicon is 90%.

What is the mass of silicon made?

A 1.26 g

B 1.31 g

C 1.40 g

D 1.55 g

Your answer

[1]

6. A sample of boron contains the isotopes ^{10}B and ^{11}B. The relative atomic mass of the boron sample is 10.8.

What is the percentage of ^{11}B atoms in the sample of boron?

A 8.0%

B 20%

C 80%

D 92%

Your answer

[1]

7. In the compound $[ICl_2]^+ [SbCl_6]^-$, the oxidation number of chlorine is –1.

What are the oxidation numbers of I and Sb in the compound?

	I	Sb
A	+1	+5
B	+1	+7
C	+3	+5
D	+3	+7

Your answer ☐

[1]

8. What is the number of hydrogen atoms in 0.125 mol of C_2H_5OH?

A 7.525×10^{22}

B 4.515×10^{23}

C 3.7625×10^{23}

D 3.612×10^{24}

Your answer ☐

[1]

9. A student titrates a standard solution of barium hydroxide, $Ba(OH)_2$, with nitric acid, HNO_3.

25.00 cm^3 of 0.0450 mol dm^{-3} $Ba(OH)_2$ are needed to neutralise 23.35 cm^3 of $HNO_3(aq)$. What is the concentration, in mol dm^{-3}, of the nitric acid?

A 0.0241

B 0.0482

C 0.0900

D 0.0964

Your answer ☐

[1]

10. In the Periodic Table, element **X** is in Group 2 and element **Y** is in Group 15 (5).

What is the likely formula of an ionic

compound of **X** and **Y**?

A $\mathbf{X_2Y_5}$

B $\mathbf{X_2Y_3}$

C $\mathbf{X_3Y_2}$

D $\mathbf{X_5Y_2}$

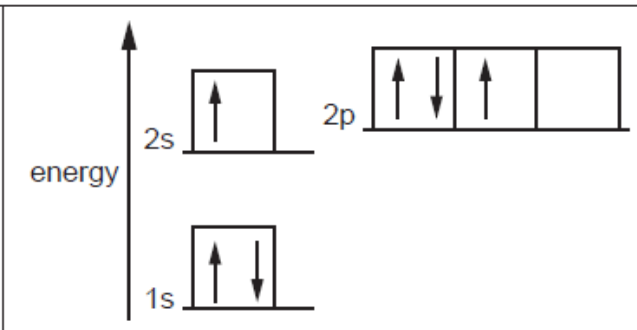
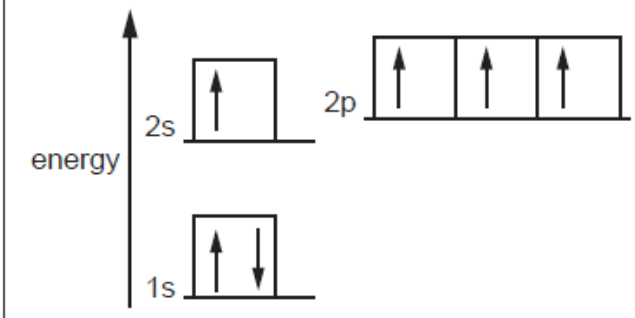
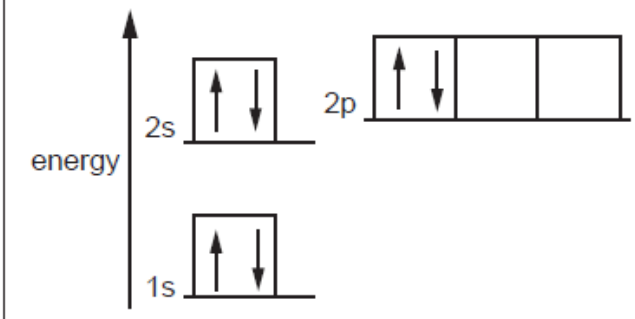
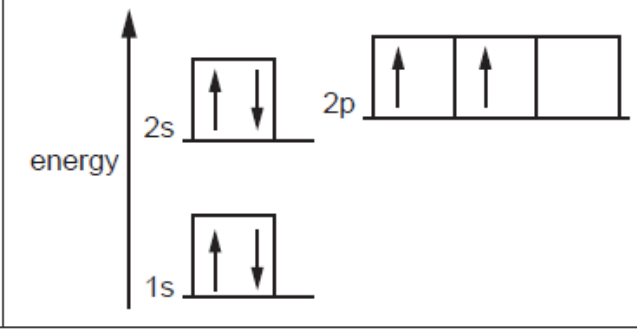
Your answer ☐

[1]

11. In the diagrams below, each box represents an orbital and each electron is shown as an arrow.

Which diagram shows the correct arrangement of electrons in an atom of carbon?

[1]

A	
B	
C	
D	

Your answer

12. One molecule of a gas has a mass of 2.658×10^{-23} g.

What is a possible formula of the gas?

A CH_4

B O_2

C SO_2

D SO_3

[1]

Your answer

13 In the laboratory, acid spills can be cleaned up and made safe by spreading anhydrous sodiumcarbonate over the spill to neutralise the acid.

A student accidentally spills 50.0 cm^3 of 2.00 mol dm^{-3} HCl(aq) on the bench.

What is the minimum mass of anhydrous sodium carbonate required to neutralise the acid?

A 4.15 g

B 5.30 g

C 8.30 g

D 10.6 g

Your answer

[1]

14 What is the oxidation number of N in $Mg(NO_2)_2 \cdot 3H_2O$?

A +2

B +3

C +4

D +5

Your answer

[1]

15 Which reaction is a redox reaction?

A $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$

B $NaNO_2 + HCl \rightarrow NaCl + HNO_2$

C $CaSO_3 + 2HCl \rightarrow CaCl_2 + H_2O + SO_2$

D $3CuO + 2NH_3 \rightarrow 3Cu + 3H_2O + N_2$

Your answer

[1]

16 3.528 g of a Group 2 metal, **M**, is reacted with an excess of chlorine. The reaction forms 9.775 g of a chloride.

What is metal **M**?

A magnesium
B calcium
C strontium
D barium

Your answer ☐

[1]

Total Marks for Question Set Module 2: 16

OCR
Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge