Unit Code: J248/01
Qual Name: GCSE Chemistry A (Gateway)
Qual Title: C1-C3 and C7 Foundation

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments	Maths	Practical Assessment
1	1	1	AO1	1.2e	C1.2 Atomic Structure				
1	2	1	AO2	1.1a	C1.2 Atomic Structure			Y	
1	3	1	AO1	1.1a	C1.2 Atomic Structure				
1	4	1	AO1	1.2a	C1.2 Atomic Structure				
1	5	1	AO1	1.2c	C1.2 Atomic Structure				
1	6	1	AO1	1.1a	C1.1 The particle model		*Please note: images are not to scale as they may vary in colour, density, shade and size when reproduced using different printers and photocopiers.*		
1	7	1	AO1	1.1a	C1.1 The particle model				
1	8	1	AO2	1.1a	C1.1 The particle model				
1	9	1	AO1	1.2a	C1.2 Atomic structure				
1	10	1	AO2	1.2e	C1.2 Atomic structure				
2	1	1	AO1	2.1f	C2.1 Purity and separating materials				
2	2	1	AO1	2.2a	C2.2 Bonding				
2	3	1	AO1	2.1c	C2.1 Purity and separating materials				
2	4	1	AO1	2.3g	C2.3 Properties of Materials				
2	5	1	AO2	2.1h	C2.1 Purity and separating materials				Y
2	6	1	AO2	2.1i	C2.1 Purity and separating materials				
2	7	1	AO2	2.3e	C2.3 Properties of matter				
2	8	1	AO2	2.1d	C2.1 Purity and separating materials				
2	9	1	AO1	2.3f	C2.3 Properties of materials				
2	10	1	AO1	2.2a	C2.2 Bonding				
2	11	1	AO1	2.2b	C2.2 Bonding				
2	12	1	AO1	2.2e	C2.2 Bonding				
2	13	1	AO2	2.2c	C2.2 Bonding				
2	14	1	AO2	2.2c	C2.2 Bonding				

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2	15	1	AO1	2.3i	C2.3 Properties of materials				
2	16	1	AO1	2.3d	C2.3 Properties of materials				
2	17	1	AO2	2.2c	C2.2 Bonding				
2	18	1	AO2	2.1c	C2.1 Purity and separating mixtures			Y	
2	19	1	AO2	2.2d	C2.2 Bonding				
2	20	1	AO2	2.3g	C2.3 Properties of materials			Y	
2	21	1	AO2	2.1d	C2.1 Purity and separating mixtures			Y	
3	1	1	AO2	3.1i	C3.1 Introducing chemical reactions		*Please note: images are not to scale as they may vary in colour, density, shade and size when reproduced using different printers and photocopiers.*		
3	2	1	AO1	3.2b	C3.2 Energetics			Y	
3	3	1	AO1	3.3f	C3.3 Types of chemical reactions				Y
3	4	1	AO1	3.3h	C3.3 Types of Chemical reactions				Y
3	5	1	AO2	3.1d	C3.1 Introducing Chemical reactions				
3	6	1	AO2	3.3a	C3.3 Types of Chemical reactions				
3	7	1	AO2	3.3a	C3.3 Types of Chemical reactions				
3	8	1	AO1	3.3f	C3.3 Types of Chemical reactions			Y	
3	9	1	AO1	3.3e	C3.3 Types of Chemical reactions				
3	10	1	AO1	3.1f	C3.1 Introducing chemical reactions				
3	11	1	AO2	3.3h	C3.3 Types of chemical reactions				
3	12	1	AO1	3.2c	C3.2 Energetics				
3	13	1	AO2	3.4a	C3.4 Electrolysis				Y
3	14	1	AO2	3.1d	C3.1 Introducing chemical reactions			Y	
4	1a	4	AO1, AO3	3.2a	C3.2 Energetics	Identify exothermic and endothermic reactions.			
4	1b	2	AO3	3.2a	C3.2 Energetics	Improve an experimental method.			Y
4	1c	2	AO2	2.1c	C2.1 Purity and separating materials	Calculate relative formula mass.		Y	

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5	1a	2	AO2	3.4b	C3.4 Electrolysis	Identify products of electrolysis.			
5	1b	2	AO1	3.4c	C3.4 Electrolysis				
5	1c	2	AO2	3.4c	C3.4 Electrolysis				
5	1d	3	AO1	3.4c	C3.4 Electrolysis	Describe what happens at electrodes during electrolysis.		Y	
6	1	6	AO2, AO3	2.1f, 2.1j	C2.1 Purity and separating mixtures	Suggest methods of separation.	LoR Question		Y
7	1a	2	AO1	3.1b, 3.1f	C3.1 Introducing chemical reactions	Balance a chemical equation.			
7	1b	1	AO1	3.3a	C3.3 Types of chemical reactions	Identify species which are oxidised and reduced.			
7	1c	3	AO1	3.3k	C3.3 Types of chemical reactions	Describe how to measure pH.			Y
8	1a	4	AO2, AO3	3.3f	C3.3 Types of chemical reactions	Describe reactions of carbonates and metals with acids.			
8	1bi	2	AO2	3.1b, 3.3d	C3.3 Types of chemical reactions	Write a balanced chemical equation.		Y	
8	1bii	4	AO3	3.3d	C3.3 Types of chemical reactions	Improve an experimental method.			Y
9	1a	1	AO2	3.1a	C3.1 Introducing chemical reactions	Write the formula of a simple covalent compound.			
9	1bi	2	AO2	2.3d	C2.3 Properties of materials	Plot a line graph.			
9	1bii	1	AO2	2.3d	C2.3 Properties of materials	Read data from a line graph.		Y	
9	1biii	2	AO1	2.3d	C2.3 Properties of materials	Describe and explain a pattern shown in a line graph.			
9	1c	2	AO2	3.1b	C3.1 Introducing chemical reactions	Write a balanced chemical equation.		Y	
9	1d	3	AO2, AO3	3.2d	C3.2 Energetics	Calculate an energy change in a chemical reaction.		Y	
10	1a	2	AO1	2.3i	C2.3 Properties of materials	Describe the properties of nanoparticles.			
10	1b	2	AO1	2.3g	C2.3 Properties of materials	Calculate the number of nanoparticles in a sample.		Y	
11	1	2	AO1	2.2g	C2.2 Bonding	Describe the limitations of a displayed formula.			
12	1a	4	AO2, AO3	1.2e	C1.2 Atomic structure	Calculate numbers of protons, neutrons and electrons.			
12	1b	2	AO2	2.2b, 2.2c	C2.2 Bonding	Identify atoms and ions from data about atomic structure.			
12	1c	4	AO2	2.2c	C2.2 Bonding	Explain how the position of an element in the periodic table is related to its electronic structure.			

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments	Maths	Practical Assessment
12	1d	2	AO1	1.2d	C1.2 Atomic structure	Recall relative masses and charges of protons, neutrons and electrons.			
12	1e	1	AO1	1.2a	C1.2 Atomic structure	Describe the development of the atomic model.			
13	1a	3	AO1	2.3c	C2.3 Properties of materials	Explain the properties of diamond and graphite.			
13	1b	1	AO1	2.3b	C2.3 Properties of materials	Explain why carbon can form different compounds.			
13	1c	2	AO2	2.3e	C2.3 Properties of materials	Use data to predict states of substances.			
14	1a	3	AO2	3.2a	C3.2 Energetics	Use data to distinguish between exothermic and endothermic reactions.		Y	Y
14	1b	1	AO2	3.2a	C3.2 Energetics	Use data to distinguish between exothermic and endothermic reactions.		Y	Y
14	1ci	1	AO2	3.2b	C3.2 Energetics	Interpret a reaction profile.		Y	Y
14	1cii	1	AO2	3.2b	C3.2 Energetics	Interpret a reaction profile.		Y	Y
15	1a	2	AO2	2.1d	C2.1 Purity and separating materials	Interpret a displayed formula.		Y	
15	1b	1	AO2	2.1d	C2.1 Purity and separating materials	Deduce an empirical formula.		Y	
15	1c	2	AO2	2.3e	C2.3 Properties of materials	Predict the state of a substance.		Y	
16	1a	2	AO3	2.1f	C2.1 Purifying and separating materials	Describe filtration.			Y
16	1b	2	AO3	2.1f	C2.1 Purifying and separating materials	Describe distillation.			Y
16	1ci	1	AO1	2.1a	C2.1 Purifying and separating materials	Explain purity of a substance.			
16	1cii	3	AO3	2.1b	C2.1 Purifying and separating materials	Use melting point data to identify a pure/impure substances.		Y	Y
17	1a	1	AO1	3.1f	C3.1 Introducing chemical reactions	Use state symbols.			Y
17	1b	1	AO2	3.1i	C3.1 Introducing chemical reactions	Use the law of conservation of mass.		Y	Y
17	1c	2	AO3	3.1i	C3.1 Introducing chemical reactions	Use the law of conservation of mass.		Y	Y
17	1di	1	AO2	2.1c	C2.1 Purity and separating materials	Calculate relative formula mass.		Y	
17	1dii	2	AO2, AO3	3.1i	C3.1 Introducing chemical reactions	Use the law of conservation of mass.		Y	
18	1a	2	AO2	3.4a	C3.4 Electrolysis	Plot a line graph.		Y	Y

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments	Maths	Practical Assessment
18	1b	1	AO2	3.4a	C3.4 Electrolysis	Identify anomalous results.		Y	Y
18	1c	1	AO2	3.4d	C3.4 Electrolysis	Describe reactions at electrodes during electrolysis.			Y
18	1d	2	AO2	3.4d	C3.4 Electrolysis	Describe reactions at electrodes during electrolysis.			Y
19	1a	4	AO1	2.3c	C2.3 Properties of materials	Describe the properties of diamond and graphite.			
19	1b	1	AO1	2.3a	C2.3 Properties of materials	Describe the bonding in diamond.			
19	1c	2	AO1	2.3c	C2.3 Properties of materials	Explain the properties of graphite.			
20	1a	1	AO1	1.2b	C1.2 Atomic structure	Describe the atom.			
20	1b	1	AO1	1.2b	C1.2 Atomic structure	Describe the atom.			
20	1c	2	AO1	1.2b	C1.2 Atomic structure	Describe the atom.			
20	1d	2	AO1	1.2e	C1.2 Atomic structure	Describe isotopes.			
21	1a	1	AO1	2.1h	C2.1 Purity and separating mixtures	Describe phases in chromatography.			Y
21	1b	1	AO1	2.1g	C2.1 Purity and separating mixtures	Describe chromatography.			Y
21	1ci	2	AO2	2.1i	C2.1 Purity and separating mixtures	Using Rf values.		Y	Y
21	1cii	2	AO2	2.1i	C2.1 Purity and separating mixtures	Interpreting chromatograms.			Y
22	1	6	AO2, AO3	2.2d, 2.3f	C2.2 Bonding, C2.3 Properties of materials	Describe and explain the bonding in different substances.	LoR Question		
23	1ai	1	AO1	1.1a	C1.1 The particle model	Explain properties of solids, liquids and gases.			
23	1aii	3	AO1	1.1a	C1.1 The particle model	Explain properties of solids, liquids and gases.			
23	1aiii	2	AO1	1.1a	C1.1 The particle model	Explain properties of solids, liquids and gases.			
23	1b	2	AO1, AO2	3.1c	C3.1 Introducing chemical reactions	Write a balanced symbol equation.			
23	1c	1	AO2	2.1c	C2.1 Purity and separating mixtures	Calculate relative formula mass		Y	
24	1a	4	AO3	3.3d	C3.3 Types of chemical reactions	Describe the preparation of a salt.			Y
24	1b	1	AO2	3.1c, 3.3d	C3.1 Introducing chemical reactions, C3.3 Types of chemical reactions	Write a balanced symbol equation.			Y
24	1c	3	AO2	3.3f	C3.3 Types of chemical reactions	Identify reactants and products in neutralisation reactions.			Y
24	1d	1	AO2	3.3d	C3.3 Types of chemical reactions	Describe neutralisation.			Y

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments	Maths	Practical Assessment
25	1a	3	AO1	2.1f	C2.1 Purity and separating mixtures	Name methods of separation.			Y
25	1b	1	AO2	2.1j	C2.1 Purity and separating mixtures	Describe how to separate a mixture.			
25	1c	2	AO1	1.1b	C1.1 The particle model	Describe signs of a chemical reaction.			
25	1di	2	AO1	1.1a	C1.1 The particle model	Describe particles in a solid, liquid or gas.			
25	1di	1	AO1	1.1a	C1.1 The particle model	Describe particles in a solid, liquid or gas.			
26	1ai	1	AO3	2.1b	C2.1 Purify and separating mixtures	Interpret a heating curve.		Y	Y
26	1aii	1	AO1	2.1a	C2.1 Purify and separating mixtures	Explain the term 'pure'.			
26	1aiii	1	AO2	2.1b	C2.1 Purify and separating mixtures	Interpret a heating curve.			Y
26	1b*	6	AO1, AO2, AO3	2.2d, 2.2e	C2.2 Bonding	Describe and explain the bonding in a compound.	LoR Question		
27	1ai	1	AO3	2.1i	C2.1 Purity and separating mixtures	Interpret chromatograms.			Y
27	1aii	2	AO3	2.1i	C2.1 Purity and separating mixtures	Interpret chromatograms.			Y
27	1aiii	3	AO1, AO2	2.1i	C2.1 Purity and separating mixtures	Calculate an Rf value.		Y	Y
27	1b	1	AO3	2.1i	C2.1 Purity and separating mixtures	Interpret chromatograms.			
28	1ai	1	AO1	3.2a	C3.2 Energetics	Identify exothermic and endothermic reactions.			Y
28	1aii	2	AO2	3.1c, 3.3f	C3.1 Chemical reactions, C3.3 Types of chemical reactions	Write a balanced symbol equation.		Y	Y
28	1aiii	1	AO2	3.3f	C3.3 Types of chemical reactions.	Name product of neutralisation.			Y
28	1bi	1	AO3	3.2a	C3.2 Energetics	Describe and explain an anomalous result.			
28	1bii	1	AO3	3.2a	C3.2 Energetics	Describe and explain an anomalous result.			Y
28	1biii	2	AO2	3.2a	C3.2 Energetics	Calculate a mean value.		Y	
28	1ci	2	AO2, AO3	3.2a	C3.2 Energetics	Evaluate an experiment.			Y
28	1cii	2	AO3	3.2a	C3.2 Energetics	Evaluate an experiment.			Y
28	1d	3	AO1, AO2	3.2b	C3.2 Energetics	Draw and label a reaction profile.			

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29	1ai	1	AO1	2.3b	C2.3 Properties of materials	Identify different types of compounds of carbon.			
29	1aii	2	AO1	2.2d	C2.2 Bonding	Describe structure of diamond.			
29	1bi	2	AO1	2.3c	C2.3 Properties of materials	Explain properties of diamond.			
29	1bii	1	AO1	2.3c	C2.3 Properties of materials	Explain properties of graphite.			
29	1c	2	AO3	2.3c	C2.3 Properties of materials	Explain properties of graphene.			
29	1di	2	AO2	2.2f	C2.2 Bonding	Draw a dot and cross diagram.			
29	1dii	2	AO2	2.3f	C2.3 Properties of materials	Explain properties of simple molecules.			
30	1ai	2	AO1	1.2b	C1.2 Atomic structure	Describe the structure of an atom.			
30	1aii	1	AO2	1.2d	C1.2 Atomic structure	Describe the structure of an atom.			
30	1b	2	AO1	1.2e	C1.2 Atomic structure	Explain isotopes.			
31	1ai	2	AO1	2.2d	C2.2 Bonding	Describe the structure of a metal.			
31	1aii	1	AO1	2.3f	C2.3 Properties of materials	Explain the properties of a metal.			
31	1aiii	2	AO1	2.3f	C2.3 Properties of materials	Explain the properties of a metal.			
31	1b	2	AO3	2.1e	C2.1 Purity and separating materials	Evaluate the use of different alloys.			
31	1ci	1	AO3	2.1e	C2.1 Purity and separating materials	Evaluate the composition of an alloy.		Y	
31	1cii	1	AO3	2.1e	C2.1 Purity and separating materials	Evaluate the composition of an alloy.			
32	1a	1	AO2	2.3j	C2.3 Properties of nanoparticles	Explain the risk of nanoparticles.			
32	1b	4	AO1, AO2	2.3h	C2.3 Properties of nanoparticles	Calculate the surface to volume ratio of a nanoparticle.		Y	
32	1ci	2	AO1	2.3g	C2.3 Properties of nanoparticles	Compare dimensions of nanoparticles and molecules.		Y	
32	1cii	2	AO2	2.3g	C2.3 Properties of nanoparticles	Calculate number of nanoparticles in a substance.		Y	