Unit Code: J248/02
Qual Name: GCSE Chemistry A(Gateway Science)
Qual Title: C4-C6 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	4.2b	C4.2 Identifying the products of chemical reactions				
1	2	1	AO2	4.1f	C4.1 Predicting chemical reactions				Y
1	3	1	AO1	4.1a	C4.1 Predicting chemical reactions				
1	4	1	AO1	4.2b	C4.2 Identifying the products of chemical reactions				
1	5	1	AO1	4.1a	C4,1 Predicting chemical reactions				Y
1	6	1	AO1	4.2a	C4.2 Identifying the products of chemical reactions				Y
1	7	1	AO2	4.2g	C4.2 Identifying the products of chemical reactions			Y	
1	8	1	AO1	4.1c	C4.1 Predicting chemical reactions				
1	9	1	AO1	4.1a	C4.1 Predicting chemical reactions				
1	10	1	AO1	4.2a	C4.2 Identifying the products of chemical reactions				
1	11	1	AO1	4.1c	C4.1 Predicting chemical reactions				
1	12	1	AO2	4.2f	C4.2 Identifying the products of chemical reactions			Y	
2	1	1	AO2	5.2a	C5.2 Controlling chemical reactions				Y
2	2	1	AO2	5.2c	C5.2 Controlling chemical reactions				Y
2	3	1	AO2	5.1g	C5.1 Monitoring chemical reactions			Y	
2	4	1	AO1	5.2f	C5.2 Controlling reactions				
2	5	1	AO2	5.1g	C5.1 Monitoring chemical reactions			Y	
2	6	1	AO1	5.3b	C5.3 Equilibria				
2	7	1	AO1	5.2f	C5.2 Controlling reactions				
2	8	1	AO1	5.1i	C5.1 Monitoring chemical reactions				
3	1	1	AO1	6.2b	C6.2 Organic Chemistry				
3	2	1	AO1	6.2h	C6.2 Organic Chemistry				
3	3	1	AO2	6.1i	C6.1 Improving processes and products				
3	4	1	AO1	6.3g	C6.3 Interpreting and interacting with earth systems				
3	5	1	AO1	6.2c	C6.2 Organic Chemistry				
3	6	1	AO2	6.2o	C6.2 Organic Chemistry			Y	

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments	Maths	Practical Assessment
3	7	1	AO2	6.2a	C6.2 Organic Chemistry				
3	8	1	AO2	6.2a	C6.2 Organic Chemistry				
3	9	1	AO1	6.2o	C6.2 Organic chemistry				
3	10	1	AO2	6.2a	C6.2 Organic chemistry				
3	11	1	AO2	6.1a	C6.1 Improving processes and products				
3	12	1	AO2	6.2g	C6.2 Organic chemistry				
3	13	1	AO1	6.2h	C6.2 Organic chemistry				
3	14	1	AO1	6.3f	C6.3 Interpreting and interacting with earth systems				
3	15	1	AO1	6.3b	C6.3 Interpreting and interacting with earth systems				
3	16	1	AO2	6.1s	C6.1 Improving processes and products				
3	17	1	AO1	6.3g	C6.3 Interpreting and interacting with earth systems				
3	18	1	AO1	6.3b	C6.3 Interpreting and interacting with earth systems				
3	19	1	AO2	6.2j, 6.2l	C6.2 Organic chemistry				
3	20	1	AO1	6.2k	C6.2 Organic chemistry				
3	21	1	AO1	6.2c	C6.2 Organic chemistry				
3	22	1	AO1	6.1k	C6.1 Improving processes and products				
3	23	1	AO1	6.1g	C6.1 Improving processes and products				
3	24	1	AO1	6.3a	C6.3 Interpreting and interacting with earth systems				
4	1a	4	AO1	2.1f, 6.2j	C2.1 Purity and separating mixtures, C6.2 Organic Chemistry	Describe fractional distillation.			
4	1b	1	AO2	3.1b, 6.2o	C3.1 Introducing chemical reactions, C6.2 Organic chemistry	Write a balanced symbol equation.		Y	
4	1c	1	AO2	6.1s	C6.1 Improving processes and products	Describe properties of polymers.			
5	1a	2	AO1	5.3b	C5.3 Equilibria	Describe a dynamic equilibrium.			
5	1b	2	AO2	5.1h	C5.1 Monitoring and controlling chemical reactions	Calculate percentage yield.		Y	
5	1c	6	AO1, AO3	5.2c, 5.2d	C5.2 Controlling chemical reactions, C5.3 Equilibria	Describe and explain changing reaction conditions on yield and	LoR Question	Y	
6	1a	4	AO1	3.1b, 6.1h	C3.1 Introducing chemical reactions, C6.1 Global challenges	Write balanced symbol equations		Y	Y
6	1b	1	AO1	3.3d, 6.1h	C3.3 Types of chemical reactions, C6.1 Global challenges	Describe neutralisation.			
6	1c	1	AO2	5.1g	C5.1 Monitoring and controlling chemical reactions	Calculate mass of product formed.		Y	
6	1d	1	AO1	2.1f, 6.1h	C2.1 Purity and separating mixtures, C6.1 Global challenges	Describe separation techniques.			Y

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7	1a	2	AO2	6.3d	C6.3 Interpreting and interacting with earth systems	Analyse data about carbon dioxide production.		Y	
7	1b	2	AO3	6.3d	C6.3 Interpreting and interacting with earth systems	Analyse data about carbon dioxide production.		Y	
7	1c	2	AO3	6.3d	C6.3 Interpreting and interacting with earth systems	Evaluate data about carbon dioxide production.			
8	1a	2	AO2	3.1b, 6.1p	C3.1 Introducing chemical reactions, C6.1 Improving processes and products	Write a balanced symbol equation.		Y	
8	1bi	2	AO2	6.1p	C6.1 Improving processes and products	Calculate percentage composition of rust.		Y	
8	1bii	3	AO2, AO3	6.1p	C6.1 Improving processes and products	Calculate mass of rust produced.		Y	Y
9	1a	3	AO3	5.2a	C5.2 Controlling reactions	Describe methods to determine rate of reaction.		Y	Y
9	1bi	1	AO2	5.2a, 5.2g	C5.2 Controlling reactions	Describe methods to determine rate of reaction.			Y
9	1bii	1	AO2	5.2a, 5.2c	C5.2 Controlling reactions	Describe methods to determine rate of reaction.			Y
9	1biii	2	AO3	5.2f, 5.2g	C5.2 Controlling reactions	Identifying catalysts.			Y
9	1biv	1	AO3	5.2a, 5.2f, 5.2g	C5.2 Controlling reactions	Evaluate an experimental method.			Y
9	1bv	2	AO2	5.2e	C5.2 Controlling reactions	Describe effect of surface area on rate of reaction.			Y
10	1ai	2	AO2	4.1b	C4.1 Predicting chemical reactions	Predict trends down group 7.			
10	1aii	1	AO2	4.1a	C4.1 Predicting chemical reactions	Describe displacement reactions of the halogens with halides.			
10	1aiii	1	AO2	4.1b	C4.1 Predicting chemical reactions	Explain the reactivity of the halogens.			
10	1bi	1	AO1	2.2h, 4.1b	C2.2 Bonding, C4.1 Predicting chemical reactions	Explain the reactivity of the halogens.			
10	1bii	2	AO2	3.1b, 4.1b	C3.1 Introducing chemical reactions, C4.1 Predicting chemical reactions	Write a balanced symbol equation.		Y	
10	1biii	1	AO2	3.1a, 4.1b	C3.1 Introducing chemical reactions, C4.1 Predicting chemical reactions	Write the formula of a halide.			
11	1a	2	AO1	5.1b	C5.1 Monitoring and controlling chemical reactions	Describe how to perform a titration.			Y
11	1b	2	AO1	3.3k, 5.1b	C3.3 Types of chemical reactions, C5.1 Monitoring and controlling chemical reactions	Describe how to perform a titration.			Y
11	1ci	2	AO2	5.1b	C5.1 Monitoring and controlling chemical reactions	Reading a burette.			Y
11	1cii	1	AO3	5.1d	C5.1 Monitoring and controlling chemical reactions	Calculate a mean titre.		Y	
11	1d	2	AO2	5.1j	C5.1 Monitoring and controlling chemical reactions	Calculate atom economy.		Y	

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12	1a	5	AO1	4.2a	C4.2 Identifying the products of chemical reactions	Describe tests to identify gases.			
12	1b	3	AO1	4.2c	C4.2 Identifying the products of chemical reactions	Describe how to perform a flame test.			Y
12	1c	4	AO3	4.2d	C4.2 Identifying the products of chemical reactions	Identify ions from results of chemical tests			
13	1a	1	AO1	4.1a	C4.1 Predicting chemical reactions	Recall reactivity of the halogens.			
13	1bi	1	AO2	4.1b	C4.1 Predicting chemical reactions	Predict trends in the halogens.			
13	1bii	1	AO2	4.1b	C4.1 Predicting chemical reactions	Predict trends in the halogens.			
13	1ci	1	AO2	4.1d	C4.1 Predicting chemical reactions	Name product of a chemical reaction.			
13	1cii	2	AO2	3.1b, 4.1d	C3.1 Introducing chemical reactions, C4.1 Predicting chemical reactions	Write a balanced symbol equation.		1	
14	1a	1	AO3	3.3f, 4.1e	C3.3 Types of chemical reactions, C4.1 Predicting chemical reactions	Explain observations of reactions.			1
14	1b	1	AO3	3.3f, 4.1e	C3.3 Types of chemical reactions, C4.1 Predicting chemical reactions	Explain observations of reactions.			1
14	1c	3	AO1, AO2	5.1h	C5.1 Monitoring chemical reactions	Calculate a percentage yield.		3	
14	1d	1	AO3	3.3f, 4.1e	C3.3 Types of chemical reactions, C4.1 Predicting chemical reactions	Explain why percentage yield is less than 100%			1
15	1a	2	AO2	3.1b, 5.2a	C3.1 Introducing chemical reactions, C5.2 Controlling chemical reactions	Write a balanced symbol equation.		1	
15	1bi	1	AO2	5.2b	C5.2 Controlling chemical reactions	Interpret experimental results.		1	1
15	1bii	2	AO2	5.2b	C5.2 Controlling chemical reactions	Draw a line graph.		1	2
15	1biii	1	AO2	5.2b	C5.2 Controlling chemical reactions	Interpret experimental results.			1
15	1c	4	AO1, AO2	5.2d	C5.2 Controlling chemical reactions	Explain effects of temperature and concentration on rate			
16	1a	1	AO1	5.3a	C5.3 Equilibria	Explain reversible reactions.			
16	1bi	1	AO2	5.3a	C5.3 Equilibria	Describe trends in data.			
16	1bii	1	AO2	5.3a	C5.3 Equilibria	Interpret data.		1	
17	1a	3	AO1	4.2c	C4.2 Identifying the products of chemical reactions	Describe how to perform a flame test.			3
17	1b	6	AO1, AO3	4.2e, 4.2d	C4.2 Identifying the products of chemical reactions	Identify species from test results.	LoR Question		6
18	1a	4	AO3	5.1b	C5.1 Monitoring chemical reactions	Describe how to carry out a titration.			4
18	1b	2	AO2	5.1b	C5.1 Monitoring chemical reactions	Calculate a mean titre.		1	2
18	1c	3	AO1, AO2	5.1i, 5.1j	C5.1 Monitoring chemical reactions	Calculate atom economy.		3	2
19	1a	2	AO1	6.3c	C6.3 Interpreting and interacting with earth systems	Describe the greenhouse effect.			
19	1b	2	AO1	6.3e	C6.3 Interpreting and interacting with earth systems	Describe how greenhouse emissions can be reduced			
20	1a	3	AO1	6.1o	C6.1 Improving processes and products	Describe composition of alloys.			
20	1b	2	AO2	6.1s	C6.1 Improving processes and products	Relate properties of materials to their uses.			

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20	1c	2	AO1	6.1p	C6.1 Improving processes and products	Write a word equation.			
20	1di	2	AO1	6.1q	C6.1 Improving processes and products	Explain sacrificial protection.			
20	1dii	1	AO1	6.1q	C6.1 Improving processes and products	Explain sacrificial protection.			
21	1a	3	AO3	6.1l	C6.1 Global challenges	Interpret a life-cycle assessment.			
21	1b	3	AO1	C2.1f, 6.2k	C6.2 Organic chemistry	Explain fractional distillation.			
21	1c	2	AO1, AO3	C2.1f, 6.2k	C2.1 Purity and separating mixtures, C6.2 Organic chemistry	Explain fractional distillation.			
21	1d	3	AO3	6.2q	C6.2 Organic chemistry	Explain advantages/disadvantages of hydrogen/oxygen fuel cell			
22	1a	3	AO2	6.2a	C6.2 Organic chemistry	Draw a line graph.		2	
22	1bi	1	AO2	6.2a	C6.2 Organic chemistry	Interpret a graph.		1	
22	1bii	1	AO2	6.2b	C6.2 Organic chemistry	Draw a displayed formula.		1	
22	1c	1	AO1	6.2a	C6.2 Organic chemistry	Identify functional groups.			
22	1d	1	AO2	6.2c	C6.2 Organic chemistry	Write the formula of a carboxylic acid			
23	1a	3	AO2	6.1p	C6.1 Improving processes and products	Describe corrosion.			3
23	1b	2	AO1	6.1q	C6.1 Improving processes and products	Explain prevention of corrosion.			
23	1c	2	AO1	6.1q	C6.1 Improving processes and products	Explain sacrificial protection.			
24	1a	3	AO1	6.2a, 6.2b	C6.2 Organic chemistry	Name/write/draw formula of various organic molecules.			
24	1b	2	AO2	6.2a, 6.2m	C6.2 Organic chemistry	Explain saturated hydrocarbon.			
24	1c	2	AO2	6.2c	C6.2 Organic chemistry	Describe test for a double bond.			2
24	1d	1	AO1	6.2a	C6.2 Organic chemistry	Identify a homologous series.			
24	1e	2	AO2	3.1c, 6.2c	C3.1 Introducing chemical equations, C6.2 Organic chemistry	Write a balanced symbol equation.		1	
25	1ai	1	AO2	6.1a	C6.1 Improving processes and products	Write a word equation.			
25	1aii	1	AO2	3.3a, 6.1a	C3.3 Types of chemical reaction, C6.1 Improving processes and products	Explain reduction.			
25	1bi	1	AO2	6.1a	C6.1 Improving processes and products	Explain why carbon is used to extract metals.			
25	1bii	1	AO2	6.1b	C6.1 Improving processes and products	Explain why electrolysis is used to extract metals.			
25	1c	2	AO3	6.1n	C6.1 Improving processes and products	Describe why metals are recycled.			
25	1d	4	AO1, AO2	6.1o	C6.1 Improving processes and products	Calculate composition of an alloy.		4	
26	1ai	1	AO1	5.3b	C5.3 Equilibria	Explain dynamic equilibrium.			
26	1aii	1	AO1	5.3b	C5.3 Equilibria	Explain dynamic equilibrium.			
26	1b	2	AO1	6.1i	C6.1 Improving processes and products	Describe essential elements in a fertiliser.			
26	1c	2	AO2	3.3d, 6.1h	C3.3 Types of chemical reactions, C6.1 Improving processes and products	Describe the production of a fertiliser by titration.			2

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26	1d	4	AO3	3.3d, 6.1b	C3.3 Types of chemical reactions, C6.1 Improving processes and products	Describe the production of a salt by precipitation			4
27	1a	1	AO2	6.2j	C6.2 Organic chemistry	Analyse data about fractions of crude oil.			
27	1b	2	AO2	6.2j	C6.2 Organic chemistry	Analyse data about fractions of crude oil.		2	
27	1c	1	AO2	6.2i	C6.2 Organic chemistry	Write the formula of an alkane.		1	
27	1di	2	AO1	6.2o	C6.2 Organic chemistry	Describe cracking.			2
27	1dii	1	AO2	6.2o	C6.2 Organic chemistry	Deduce products of cracking.		1	1
28	1a	2	AO2	3.1g, 4.1e	C3.1 Introducing chemical reactions, C4.1 Predicting chemical reactions	Write a balanced symbol equation.		1	2
28	1b	6	AO2, AO3	5.2b	C5.2 Controlling reactions	Describe and explain variables that effect reaction time.	LoR Question	1	6
28	1c	3	AO2	5.2c, 5.2d	C5.2 Controlling reactions	Describe and explain effect of temperature on rate.		1	3
28	1d	2	AO1	5.2c, 5.2d	C5.2 Controlling reactions	Explain how rate changes during a reaction.			2
29	1a	4	AO3	6.1s	C6.1 Improving processes and products	Relate properties of materials to their uses.			
29	1b	1	AO1	6.2g	C6.2 Organic chemistry	Identify a repeat unit of a polymer			
29	1ci	3	AO2	2.3g, 5.2e	C2.3 Properties of materials, C5.2 Controlling reactions	Analyse data about nanoparticles.		3	
29	1cii	3	AO1, AO2	5.2f	C5.2 Controlling reactions	Explain efficiency of catalysts.			
30	1a	3	AO3	6.3d	C6.3 Interpreting and interacting with earth systems	Describe effect of human activity on global warming.		2	
30	1b	2	AO3	6.3d	C6.3 Interpreting and interacting with earth systems	Evaluate link between burning fossil fuels and global warming.			
30	1ci	1	AO1	6.3e	C6.3 Interpreting and interacting with earth systems	Describe effects of increased levels of carbon dioxide.			
30	1cii	1	AO1	6.3e	C6.3 Interpreting and interacting with earth systems	Describe how levels of carbon dioxide can be lowered			