**Harris Federation**

# **BTEC National Portfolio Cover Sheet**

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| Candidate Name |  |

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| Unit Title | **Unit 1 – Chemistry and Our Earth** |

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| **Unit Number** | **1** | **Date Issued** |  |

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| **Assessor(s)** |  | **Date Due** | **Date Submitted** |

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| **Assessment Decisions:** | **Have you completed a grading grid evidence sheet (see overleaf)** | Yes | No |
| **Have you annotated within the student’s work where the criteria are covered eg, P1, M2 etc** | Yes | No |

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| **Grading Decision** | **Pass / Merit / Distinction**  **P1, P2, P3, P4, P5, P6, P7, M1, M2, M3, M4, M5, M6, M7, D1, D2, D3, D4** | | |
| **Points Awarded** | **25/30/35** | **Assignment IV’d?** | Yes |
| **Has interim feedback sheet been completed?** | **Yes/No** | **Have witness statements and observation records been included (if relevant)?** | Yes/No |

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| **Overall assessor’s Feedback should be recorded below:** |
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| **Assessor Signature** |  | **Date** |  |

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| **Student Signature** |  | **Date** |  |

INTERIM FEEDBACK SHEET –

TO BE COMPLETED DURING

COMPLETION OF ASSIGNMENT

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| FEEDBACK SESSION ONE:  DATE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  What task evidence has been produced thus far? | Interim assessment evidence – How is your work progressing? What is the quality of the work like?  Are you presently working towards pass/merit/distinction level |
| Interim targets for improvement:  1)  2) |

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| FEEDBACK SESSION TWO:  DATE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  What additional task evidence has been produced thus far? | Interim assessment evidence – How is your work progressing? What is the quality of the work like?  Student is presently working towards pass/merit/distinction level |
| Final targets for improvement:  1)  2) |

RECORDING EVIDENCE AGAINST EACH

CRITERIA FROM THE GRADING GRID

**Unit 1 – Chemistry and Our Earth** Student \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Assessment Criteria | Achieved | Evidence/Page No’s in the portfolio | Comments/Feedback/Date |
| P1  Identify different types of chemical substances | **Yes/No** | Assignment 1 | **Task 1:**  **Elements, compounds , mixtures- Part One**  Create a table that shows a list of chemical substances that the refinery uses and those that are made at the refinery. Identify each one as an element, compound of mixture.  Identify whether each substance is a solid, liquid or gas at room temperature. |
| P2  Carry out a practical investigation into the physical properties of chemicals | **Yes/No** | Assignment 2 | **Task 2**  **Properties of chemicals- Part One**  Choose three of the products made at the refinery and find out some of their physical properties, (you could choose to investigate a product that uses one of the products made at the refinery as an ‘ingredient’).  Put your results into a separate leaflet. If you carry out any practical investigations using these products you could write up your results in a table. |
| P3  Describe atomic structures of elements 1-20, found in the periodic table | **Yes/No** | Assignment 3 | **Task 1: atomic structure**  Draw a labelled diagram of an atom from any of the first 20 elements in the periodic table. Include the relevant charges and masses.  **Task 2**  Draw the atomic structure of the first 20 elements in the periodic table. You need to show the number of protons and neutrons and the arrangement of electrons in shells.  Include a description of an isotope. Draw all of the isotopes of Carbon and Chlorine. Include number of protons, neutrons and arrangement of electrons on shells.  Describe how the atomic structure changes as you go across the periodic table. |
| P4  Carry out an investigation into the chemical properties of elements in groups 1 and 7 | **Yes/No** | Assignment 4 | **Task 3 (Group 1- part one)**  Describe the properties of the elements in group1. Include any observations from experiments you have seen or carried out.  **Task 4 (Group 7- part one)**  Describe the properties of the elements in group 7. Include any observations from experiments you have seen or carried out. |
| P5  Carry out an investigation to establish how factors affect the rates of chemical reactions | **Yes/No** | Assignment 5 | **Task 1: Temperature**  Write a report for the investigation you carry out to determine how temperature affects the rate of reaction. Remember to include headings and units on your table.  Draw a graph of your results.  **Task 2: Surface area-**  Write up your results for investigating surface area on the rate of reaction. Remember to include headings and units on your table.  Draw a graph of your results.  **Task 3 : Concentration**  Write up your results for investigating concentration on the rate of reaction. Remember to include headings and units on your table.  Draw a graph of your results.  **Task 4 : Catalysts**  Write up your demonstration notes on how a catalyst affects the rate of reaction.  **Task 5: Pressure**  Describe how changing pressure can affect the rates of reaction. |
| P6  Identify the human activities that are affecting the Earth and its environment | **Yes/No** | Assignment 6 | **Task 1:**  Create a table that shows the uses for the products of crude oil. Include a column that gives statistics how much is produced at Coryton each year.  **Task 2:**  For each product mention the negative effects it can have on the environment. (There may be more than one effect for each product, think about wildlife, habitats and humans too).  **Task 3**  Create another table that shows other activities/ processes humans carry out that cause problems to the Earth and Environment (that are not connected to crude oil and its products).  List the negative effects they have on the environment. |
| P7  Identify natural factors that have changed the surface and atmosphere of the Earth. | **Yes/No** | Assignment 7 | **Task 1:**  Create a poster that shows the natural factors that can change the surface and atmosphere of the Earth.  For each one, give an example of when a major change occurred (e.g: name a big volcanic eruption in last 150 years) and say how it affected the landscape and/ or atmosphere.  **Task 2:**  Prepare a powerpoint presentation that shows the positive and negative effects of these natural factors on humans and wildlife. Be sure to include illustrations.  **Task 3**  Draw a timeline to show how the atmosphere of the Earth has changed over the last 4.5 billion years.  Say what happened to cause each change. |
| M1  Describe the differences between types of chemical substances | **Yes/No** | Assignment 1 | **Task 3**  **Elements, compounds, mixtures- Part Two**  Next to your table of chemical substances describe the differences between elements, mixtures and compounds. You may use diagrams to help your explanations. (You could also try using an identification key to help the families understand.) |
| M2  Explain how the physical properties of chemicals make them suitable for their uses | **Yes/No** | Assignment 2 | **Task 4**  **Properties of chemicals- Part Two**  Choose two of your products from part one and in your leaflet explain these properties and why they are important (for example: why does it need to be a good electrical conductor?) |
| M3  Describe the trends within the atomic structure of groups 1 and 7 in the periodic table | **Yes/No** | Assignment 3 | **Task 5 (Group 1- part two)**  Name the elements in group 1 and describe the electronic structure of the first three.  Describe how the atomic structure of group 1 elements changes as you move down the group.  **Task 6 (Group 7- part two)**  Name the elements in group 7 and describe the electronic structure of the first three.  Describe how the atomic structure of group 7 elements changes as you go down the group. |
| M4  Explain why the elements of groups 1 and 7 are mostly used in the form of compounds | **Yes/No** | Assignment 4 | **Task 7 (Group 1- part three)**  List the uses of group 1 elements when they are in their elemental form.  List at least 10 uses of group 1 compounds, name these compounds, give their chemical formula. Explain how the properties of these compounds are different to the elements in them.  Explain why the company makes these group 1 compounds (why are they more useful than their elemental forms?). List domestic and industrial/ commercial uses of the products you make.  **Task 8 (Group 7- part three)**  List the uses of group 7 elements when they are in their elemental form.  List at least 5 uses of group 7 compounds, name these compounds, give their chemical formula. Explain how the properties of these compounds are different to the elements in them.  Explain why the company makes these group 7 compounds (why are they more useful than their elemental forms?). List domestic and industrial/ commercial uses of the products you make. |
| M5  Explain how different factors affect the rate of industrial reactions | **Yes/No** | Assignment 5 | **Task 6**  For tasks 1,2 ,3 and 4 draw a poster that explains what is happening to increase the rate of reactions. Explanations should have labelled diagrams to accompany them.  **Task 7**  Draw a diagram, with word equation, that shows how ammonia is made at the plant. Include the conditions used. |
| M6  Describe how the choices humans make have an effect on the Earth and its environment | **Yes/No** | Assignment 6 | **Task 4**  In your article describe, in detail, the negative effects/ problems that the refinery products and other activities have on Earth and the environment. |
| M7  Describe the ways that natural factors have changed the surface and atmosphere of the Earth over millions of years. | **Yes/No** | Assignment 7 | **Task 4**  Draw labelled diagrams/ maps of how these natural factors occur.  **Task 5**  For each of the natural factors mentioned in task 1 describe the effects on the Earth’s surface and atmosphere (include short and long term effects) |
| D1  Explain how the structure of different chemicals affects their properties | **Yes/No** | Assignment 1 | **Task 5**  **Create a leaflet that explains how the structure of two of your chosen products gives the product its properties** |
| D2  Explain the trends in the chemical behaviour of the elements of groups 1 and 7 in relation to their electronic structure | **Yes/No** | Assignment 3/4 | **Task 9 (group 1- part four)**  Explain why the elements in group 1 display the particular trends you identified in Task 3. You should include diagrams of electronic arrangements to help aid your explanation.  You can refer to any practicals you carried out, or any demonstrations you observed to help your explanations.  **Task 10 (Group 7-part four)**  Explain why the elements in group 7 display the particular trends you identified in Task 4. You should include diagrams of electronic arrangements to help aid your explanation.  You can refer to any practicals you carried out or demonstrations you observed to help your explanations. |
| D3  Analyse how different factors affect the yield of industrial reactions | **Yes/No** | Assignment 5 | **Task 8**  In your presentation include an analysis of how these different factors affect the yield of ammonia.  **Task 9**  Explain why you told your line manager that trying to cut costs of production by doing the reaction at 200°C and 100atm was a bad idea. You can include a table to show the advantages and disadvantages of using these conditions. |
| D4  Explain possible solutions to the effect humans have on the Earth and its environment. | **Yes/No** | Assignment 6 | **Task 5**  For each of the negative effects/ problems explain some of the possible solutions to minimise their impact on the Earth and its environment (you should pick at least three problems from refinery products and three other activities |

Assessor Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_