SC14 Quantitative Analysis

SC14a Yields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L5.jpg | State what is meant by the theoretical yield of a reaction. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L5.jpg | State what is meant by the actual yield of a reaction. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Calculate the percentage yield of a reaction. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Understand that the actual yield is always less than the theoretical yield of a reaction. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Describe some reasons why the actual yield is less than the theoretical yield of a reaction. |  |  |  |

SC14b Atom economy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L5.jpg | Recall the formula for calculating atom economy. |  |  |  |
|  | Calculate the atom economy for forming a desired product in a reaction. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | HExplain how atom economy and yield determine the choice of reaction pathway. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | HExplain how the usefulness of by-products determines the choice of reaction pathway. |  |  |  |

SC14c Concentrations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | H State the meaning of the term concentration. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | HCalculate concentration in g dm−3. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | HCalculate concentration in mol dm−3. |  |  |  |
|  | HConvert concentration in g dm−3 into concentration in mol dm−3. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | HConvert concentration in mol dm−3 into concentration in g dm−3. |  |  |  |

SC14d Titrations and calculations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L5.jpg | Describe the steps in carrying out an acid-alkali titration. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L7.jpg | H Calculate the number of moles of solute in a given volume of solution. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Deduce the mole ratio of acid to alkali from a balanced equation. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Calculate the concentration of a solution using the results of an acid-alkali titration. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Calculate the volume of solution required in an acid-alkali titration, given the concentrations of both the acid and the alkali. |  |  |  |

SC14e Molar volume of gases

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | H Describe what is meant by the molar volume of a gas. |  |  |  |
|  | H Use the molar volume in calculations involving solids and gases in reactions. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | H Recall Avogadro’s law. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Use Avogadro’s law to calculate the volumes of reacting gases. |  |  |  |

SC15 Dynamic Equilibria, Calculations Involving Volumes of Gases

SC15a Fertilisers and the Haber process

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Recall some compounds found in fertilisers. |  |  |  |
| Progression_icon_L7 | Describe and compare small-scale and large-scale production of ammonium sulfate. |  |  |  |
|  | Describe how ammonium nitrate is made using ammonia produced by the Haber process. |  |  |  |

SC15b Factors affecting equilibrium

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| Progression_icon_L7 | Describe how changing the reaction conditions affects the relative amount of substances in an equilibrium mixture. |  |  |  |
|  | Predict how different conditions affect how quickly equilibrium is reached. |  |  |  |
|  | Explain how the conditions are chosen for industrial reactions. |  |  |  |
| Progression_icon_L9 | Explain how the rate of reaction and equilibrium position determine the choice of reaction pathway. |  |  |  |

SC16 Chemical Cells and Fuel Cells

SC16a Chemical cells and fuel cells

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Recall why a chemical cell eventually stops producing a voltage. |  |  |  |
|  | Recall the main features of a hydrogen–oxygen fuel cell. |  |  |  |
|  | Evaluate the use of fuel cells for different purposes. |  |  |  |