| Question | Answer | Extra information | Marks | AO / Spec ref. |
| --- | --- | --- | --- | --- |
| **01.1** | Phosphate rock is insoluble in water. |  | 1 | AO2C10.4.2 |
| **01.2** | nitric acid – calcium nitrate and phosphoric acidsulfuric acid – calcium phosphate and calcium sulfate. |  | 11 | AO1C10.4.2 |
| **01.3** | The factory process produces more fertiliser each day.The demand for fertilisers is high. |  | 11 | AO3C10.4.2 |
| **02.1** | ⇌ ammonia | Both needed for the mark;Allow NH3. | 1 | AO2C10.4.1 |
| **02.2** | Increases;quickly at first then slows;at any number in range from 160–220 (atmospheres). | Ignore levels off;allow rate of increase slows for first two marking points;allow any number in range 60−66 (%). | 111 | AO2C10.4.1 |
| **02.3** | (nitrogen and hydrogen) recycled | Allow (nitrogen and hydrogen) reused. | 1 | AO1C10.4.1 |
| **02.4** | jobs lost  | Accept mines closed **or** local economy damaged. | 1 | AO3C10.4.1 |
| **02.5** | Any **one** from:* nitrates/fertilisers cost less
* more crops/food can be grown
* food costs less
* nitrates/fertilisers more widely available.
 | Accept helps fight famine/ hunger around the world. | 1 | AO3C10.4.1 |
| **03.1** | the distance between the stools |  | 1 | AO1C10.3.3 |
| **03.2** | 3200 and 3400g |  | 1 | AO3C10.3.3 |
| **03.3** | = 2500(g) |  | 1 | AO2C10.3.3 |
| **03.4** | Suitable scale added on *x*-axis and *y*-axisHalf points plotted correctlyAll points plotted correctly.  | Must use full width of grid;must use height of grid. | 111 | AO2C10.3.3 |
| **04.1** | water oxygen |  | 11 | AO1C10.3.1 |
| **04.2** | A |  | 1 | AO2C10.3.1 |
| **04.3** | to absorb water vapour |  | 1 | AO2C10.3.1 |
| **04.4** | magnesiumzinc | Accept aluminium. | 11 | AO1C10.3.1 |
| **05** | **Level 3 (5–6 marks):** Reasonably detailed comparison of properties and structures of both types of polymer. | 6 | AO1 × 4AO2 × 2C10.3.3 |
| **Level 2 (3–4 marks):** Basic comparison of properties or structures of both types of polymer. |
| **Level 1 (1–2 marks):** Description of properties or structure of one type of polymer. |
| **Level 0 (0 marks):** No relevant content. |
| **Indicative content:**Glue gun:* must melt and re-harden
* thermosoftening
* no crosslinks
* weak forces of attraction between molecules/chains
* chains can slide.

Kettle:* must withstand high temperatures
* thermosetting
* crosslinks between chains
* chains cannot slide/held in place.

*This indicative content is not exhaustive, other creditworthy responses should be awarded marks as appropriate.* |