# Year 12 Chemistry Self-Assessment Environmental Chemistry

### Formative Test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Expectation*** | ***Test Q*** | ***Proficiency***  (beginning/sometimes/proficient) | ***Comments/questions*** | ***Assignment question(s)*** |
| State, for aerobic and anaerobic conditions, the products of the decomposition of organic matter containing carbon, nitrogen, phosphorus, or sulfur. | **1(a),**  **(b)** |  |  | Assignment 3 Q1 |
| Describe and write equations for the processes of photosynthesis and aerobic respiration involving glucose. | **1(c)** |  |  | Assignment 3 Q2 |
| Describe and write equations for the formation of oxides of nitrogen by the reaction of nitrogen and oxygen at high temperatures. | **2(a)** |  |  | Assignment 3 Q3 |
| Describe how the nitrogen cycle operates by natural processes (e.g. lightning, nitrogen‑fixing bacteria, and decay) and industrial processes (e.g. fertiliser manufacture and combustion engines). | **2(e)** |  |  | Assignment 3 Q3 |
| Explain why fertilisers need to contain nutrients in soluble form. | **-** |  |  | Assignment 3 Q4 |
| Describe the action of the common greenhouse gases, carbon dioxide and methane, that serve to maintain a steady temperature in the Earth’s atmosphere. | **3(a)** |  |  | Assignment 3 Q5 |
| Explain the enhanced greenhouse effect and its potential consequences for the environment. | **3(b), (c)** |  |  | Assignment 3 Q5 |

### MORE ON NEXT PAGE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Expectation*** | ***Test Q*** | ***Proficiency***  (beginning/sometimes/proficient) | ***Comments/questions*** | ***Assignment question(s)*** |
| Calculate the concentration of H+ and OHof solutions, given their pH, and vice versa. | **4(b)** |  |  | Assignment 4 Q1 |
| Write equations to show how carbon dioxide produces acidic rain. | **4(d)** |  |  | Assignment 4 Q2 |
| Describe and write equations for the formation of acid rain. | **4(c)** |  |  | Assignment 4 Q3 |
| Describe the environmental effects of acid rain, including its action on metals and carbonates (with equations) and on the mobilisation of toxic cations such as aluminium. | **4(e)** |  |  | Assignment 4 Q4  Assignment 4 Q5 |
| Calculate the pH of solutions of strong bases and strong monoprotic acids. | **5(d)** |  |  | Assignment 4 Q1 |
| Write equations for the formation of nitrogen oxides NO and NO2. | **2(a)** |  |  |  |
| Describe and write equations showing the role of nitrogen oxides in the formation of ozone in the troposphere. | **2(b)** |  |  | Assignment 4 Q6 |
| Explain the terms ‘primary pollutants’ and ‘secondary pollutants’ with reference to the harmful effects of nitrogen oxides and ozone in the troposphere. | **2(c)** |  |  | Assignment 4 Q6 (e) |
| Describe how catalytic converters reduce the quantities of nitrogen oxides generated by cars. | **2(d)** |  |  | Assignment 4 Q7 |
| Describe the use of aluminium ions in the removal of suspended matter from water. | **5(a)** |  |  | Assignment 4 Q8 |
| State that hypochlorous acid, chlorine, and hypochlorites kill bacteria by their oxidising action. | **5(b)** |  |  |  |
| Explain the effect of pH on the equilibrium between chlorine, water, and hydrochloric acid and hypochlorous acid. | **5(c)** |  |  | Assignment 4 Q9 |