

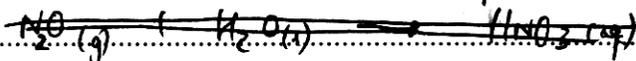
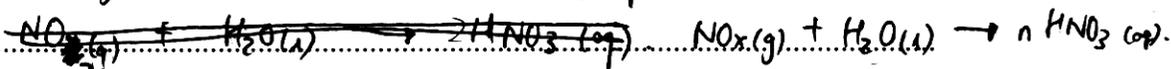
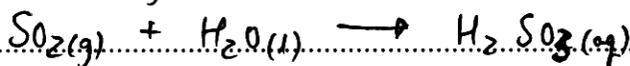
Question 21 (7 marks)

Evaluate the impact of industrial sources of sulfur dioxide and nitrogen oxides on the environment, making use of appropriate chemical equations.

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Sulphur dioxide and nitrogen oxides are produced industrially on a large scale worldwide, and they could cause great effect on the environment such as the production of acid rain, ~~photochemical smog~~ photochemical smog, greenhouse effect and they also cause changes in the pH of waterways affecting aquatic life.

Sulphur dioxide (SO_2) and nitrogen oxides (NO_x) are acidic oxides which readily react with water in the atmosphere producing acid rain.



Acids such as $\text{H}_2\text{SO}_3(\text{aq})$ and $\text{HNO}_3(\text{aq})$ produced from these oxides ~~changes~~ ^{decreases} the ~~acid~~ pH of rain producing acid rain. Acid rain could damage metal structures and marble structures by promoting corrosion and erosion, hence affecting the environment.

A buildup of these ~~g~~ gaseous oxides would also produce a layer of greenhouse gases in the atmosphere ~~and~~ contributing to global warming, also affecting the environment.

The industrial release of sulphur dioxide and nitrogen oxides could cause these detrimental effects on the environment including acid rain deconstruction of building structures, contribute to greenhouse gases and global warming and they could also change the pH of waterways affecting the growth and reproduction of aquatic life. Therefore they cause damaging effects to the environment and, ^{their production} must be carefully monitored ~~before~~ during ~~industrial~~ industrial processes to reduce the risk of these detrimental effects on the environment.