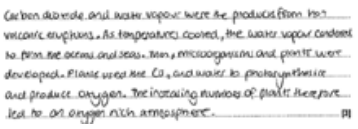
Mark scheme

Question			Answer/Indicative content	Marks	Guidance
1	a		The Earth cooled, and water vapour condensed / the Earth cooled, and water vapour turned to water ✓ (Water vapour condensed) to form oceans ✓ Plants or algae evolved <u>and</u> used <u>photosynthesis</u> to take in carbon dioxide and make oxygen ✓	3 (3 x AO 1.1)	**ALLOW MAX 2** marks if processes not in the correct order **<u>Examiner's Comments</u>** Only the highest attaining candidates gained 3 marks for this question. Although many candidates recalled that water vapour condensed to form oceans, they did not explain that this resulted from the Earth cooling. The mark for plants/algae evolving and using photosynthesis to take in carbon dioxide and make oxygen was most often gained. Lower attaining candidates described this process as respiration whilst others did not mention both plants and photosynthesis. Exemplar 2  Carbon dioxide and water vapour were the products from the volcanic eruptions. As temperatures cooled, the water vapour condensed to form the ocean and seas. Then, microorganisms and plants were developed. Plants used the CO_2 and water to photosynthesise and produce oxygen. The increasing number of plants therefore led to an oxygen rich atmosphere. [3] This response clearly describes how the amounts of carbon dioxide and oxygen changed in the correct chronological order (which was required to gain 3 marks, as this response received). The response describes temperatures cooling so that water vapour condensed to form oceans and seas. The idea that plants evolved and used carbon dioxide to photosynthesis and produce oxygen is then described.
	b	i	As the percentage of carbon dioxide decreases, the percentage of nitrogen increases / **ORA** ✓	1 (AO 3.1a)	**IGNORE** references to proportionality **<u>Examiner's Comments</u>** Most candidates described the relationship that as the percentage of carbon dioxide decreases the

					percentage of nitrogen increases or vice versa.
		ii	Answer in range 1700 - 1600 (millions of years) ✓	1 (AO 3.1a)	**Examiner's Comments** Most candidates correctly gave an answer in the range 1600 – 1700. The most common incorrect response was an answer of around 4000 millions of years ago, being when the percentages of carbon dioxide and nitrogen were equal
			Total	**5**	
2			C ✓	1 (AO 2.1)	
			Total	**1**	
3			**C**	1 (AO 1.1)	
			Total	**1**	
4			**B**	1 (AO 1.1)	
			Total	**1**	
5			**B**	1 (AO 1.1)	**Examiner's Comments** A large majority of candidates correctly answered this question. C, nitrogen was a common incorrect response, possibly because nitrogen is the most abundant gas in the Earth's present day atmosphere.
			Total	**1**	
6			**NO** Causes acid rain ✓ **CO** poisonous / toxic ✓	2(2 × 1.1)	**ALLOW** an effect of acid rain, eg erosion of stonework / corrosion of metals / kills trees or kills living things in rivers or lakes **ALLOW** causes breathing difficulties (asthma) **IGNORE** references to pollution **ALLOW** an effect of CO, eg can cause difficulty breathing or suffocation / attaches to the haemoglobin (protein) in red blood cells / reduces the amount of oxygen that the blood can carry /

					can cause drowsiness / can cause death ✓ **IGNORE** harmful / dangerous **IGNORE** contributes to global warming / greenhouse effect **Examiner's Comments** Lower attaining candidates attributed global warming / greenhouse effect to both NO and CO. Vague answers such as 'causes pollution' and 'harmful to plants / animals' were also common. The toxic nature of CO was better known than the link between NO and acid rain.
			Total	**2**	
7			B ✓	1 (AO1.1)	
			Total	**1**	