Question Number	Answer	Acceptable answers	Mark
1(a)(i)	{water vapour / steam} condensed/ changed to liquid	Allow steam cooled	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(a)(ii)	(carbon dioxide) dissolved/ absorbed / trapped	Ignore refs to plants/ rocks	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(a)(iii)	A description including the following points • (primitive) plants (produce oxygen) (1) • (by) photosynthesis (1)	Allow named plants Reject answers involving respiration	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(b)(i)	C		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	all oxygen {reacted / used up} / excess copper (present)	no oxygen left / insufficient oxygen Reject not enough time / not hot enough	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(iii)	volume gas used = 32-24 (1) = 8 (cm^3) percentage = 32-24/32 x 100 (1) = 25 (%)		**(2)**

Question Number	Answer	Acceptable answers	Mark
1(b)(iv)	oxygen in air in test tube also reacted /more than 32 cm^3 of air because of air in test tube / air in test tube will react but is not measured	some gases leaked out of apparatus allow another gas has reacted with copper	**(1)**

Question Number	Answer	Acceptable answers	Mark
2(a)	large amount of carbon dioxide and small amount of oxygen		**(1)**

Question Number	Answer	Acceptable answers	Mark
2(b)(i)	**Both marks must come from the same pair only, not one from each pair** An explanation linking EITHER plants (1) photosynthesis / take in carbon dioxide and release oxygen (1) OR oceans / rain /seas /water (1) {dissolve/absorb/take in} gas (1)	**Allow** convert to hydrocarbon (1) iron seeding (1) **Reject** respiration for photosynthesis **Ignore** breathe in carbon dioxide **Ignore** carbon is locked up in rocks	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(b)(ii)	**marks must come from the same pair only, not one from each pair** An explanation linking burning/ (complete) combustion(1) (fossil) fuels/wood/rubbish/plastic etc (1) or plants/animals/organisms (1) respiration / gas exhaled / breathing / decaying (1) or volcanic activity/volcanoes (1) eruption (releases gas) (1)	**Ignore** just 'deforestation' **Ignore** just 'farming' **Allow** any type of fuel except hydrogen **Allow** heating limestone (2)	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(c)	A description including limewater (1) turns milky/cloudy/white ecipitate (1)	 **Ignore** heat **Reject** observation if incorrect reagent eg bromine water or water	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(d)	**All marks must come from the same section only, do not mix and match** An explanation linking: EITHER **First 2 marking points** concentration of carbon dioxide increases (steadily) (1) but the temperature {fluctuates/increases and decreases} (1) **Third marking point** dependent on at least 1 comment from a graph any 1 from: not all carbon dioxide is produced by human activity (1) none of the graphs refer to human activity (1) there is no proof that human activity causes the temperature to rise (1) other factors could cause the rise in temperature (1) OR **First two marking points** as the (mean global) temperature increases (1) concentration/amount} of carbon dioxide increases (1) **Third marking point** dependent on at least 1 comment from a graph any 1 from: human activity could be causing	**Allow** the patterns of increase in carbon dioxide and temperature are different (2)	**(3)**

Question Number	Answer	Acceptable answers	Mark
3(a)(i)	iron + oxygen → iron oxide (1) oxygen +iron → iron oxide (1)	= instead of → $4Fe + 3O_2 \rightarrow 2Fe_2O_3$ (symbol equation must be fully correct)	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(a)(ii)	An explanation linking **two** of the following • the iron {reacts/combines} with the oxygen (in the air) /iron oxide formed(1) • oxygen removed (from air) (1) • volume of gas decreases / water rises to fill space (1)	**Ignore** absorbs/takes in **Accept** oxygen used up {volume/amount} of air decreases	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(a)(iii)	% oxygen in air = 21 / % air remaining = 79 (1) volume of air remaining = $\frac{10 \times 79}{100}$ (1) = 7.9 (cm^3)	% oxygen in air = 20 / % air remaining = 80 **Allow** 2 marks for 7.9 to 8 on its own **Allow** ecf from incorrect % oxygen if clear	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(a)(iv)	C		**(1)**

Question Number	Answer	Acceptable answers	Mark
3(b)	An explanation linking **two** of the following • burning/combustion (1) • removes oxygen (1) • adds carbon dioxide (1) • adds water vapour (1)	**Allow** 1 mark for adds sulphur dioxide if clear from sulphur impurities	**(2)**