C2 Topic 8 Chemistry of the Atmosphere and Using Resources REVISION (Triple)

The Composition and Evolution of the Earth's Atmosphere	
1. List the gases which make up the atmosphere, with their percentages	Nitrogen 80% oxygen 20% carbon dioxide less than 1%
2. What other two substances make up less than 1% of the Earth's atmosphere?	Water vapour and noble gases
3. What made the early atmosphere?	Volcanoes
4. Where did the oceans come from?	Condensation of water vapour
5. Which current planets was the early Earth's atmosphere like?	Mars and Venus
6. What did the early atmosphere consist of?	Mainly carbon dioxide with little or no oxygen gas.
7. What did Volcanoes also produce which gradually built up in the atmosphere?	Nitrogen
8. What happens to carbon dioxide in the oceans?	Dissolves
9. List two ways that have caused carbon dioxide levels to decrease in the atmosphere?	When the oceans formed, carbon dioxide dissolved in the water and the formation of sedimentary rocks and fossil fuels contain carbon
10. State 2 ways plants and algae have changed the atmosphere	Increased oxygen, decreased carbon dioxide
11. By what process have plants and algae changed the atmosphere?	Photosynthesis
12. Give the word equation for photosynthesis	Carbon dioxide + water → oxygen + glucose
13. When did Algae first produce oxygen?	About 2.7 billion years ago
14. What enabled animals to evolve?	As the plants evolved, the percentage of oxygen gradually increased
15. How are humans increasing the concentration of carbon dioxide in the atmosphere?	Burning fossil fuels increases CO_2
Carbon Dioxide and Methane as Greenhouse Gases	
16. List three greenhouse gases	Water vapour, carbon dioxide and methane
17. What do greenhouses gases maintain and what is the benefit of this?	Maintain temperatures on Earth high enough to support life
18. However what do these greenhouse gases contribute to?	Global warming
19. Describe the greenhouse effect in terms of the interaction of short and long wavelength radiation with matter (3 marks – 1 mark for 2, 2 marks for 4, 3 marks for 5)	• Electromagnetic radiation from the Sun passes through the Earth's atmosphere. • The Earth absorbs electromagnetic radiation with short wavelengths. • Heat is radiated from the Earth as longer wavelength infrared radiation. • Some of this infrared radiation is absorbed by greenhouse gases in the atmosphere. • The atmosphere warms up
20. Give two human activities that increase the amounts of each of the greenhouse gases carbon dioxide and methane	Deforestation and burning fossil fuels
21. What is a major cause of global warming?	An increase in average global temperature
22. What will increased global warming lead to?	Climate change

23. Give four potential effects of global climate change	Food scarcity, flooding, rising sea levels and altered habitats
24. What may climate change make it difficult to do?	Grow certain food crops
25. What non-human activities affect weather patterns and the climate?	Volcanic eruptions
26. What is a carbon footprint?	The total amount of carbon dioxide and other greenhouse gases emitted over the full life cycle of a product, service or event.
27. How can the carbon footprint be reduced?	By reducing emissions of carbon dioxide and methane.
28. How can we reduce the emissions of carbon dioxide and methane?	Reduce the burning of fossil fuels, use energy saving light bulbs, recycle, limit car usage, turn appliances off stand by
Common Atmospheric Pollutants and their Sources	
29. What is a major source of atmospheric pollutants?	Combustion of fuels
30. List 3 elements that fuels can contain	Carbon, hydrogen and sulfur
31. Give 5 gases that can be released into the atmosphere when a fuel is burned	Carbon dioxide, water vapour, carbon monoxide, sulphur dioxide and oxides of nitrogen.
32. What substances maybe released into the atmosphere that form particulates in the atmosphere	Unburned hydrocarbons
33. Name a toxic gas	Carbon monoxide
34. Give 2 properties of carbon monoxide that make it hard to detect	Colourless and odourles
35. Give two problems of sulphur dioxide and oxides of nitrogen	Respiratory problems in humans and cause acid rain.
36. Give two problems caused by particulates	Global dimming and health problems for humans.
Earth's Resources and Water	
37. What do human's use the Earth's resources for?	Warmth, shelter, food and transport
38. What should drinking water have low levels of?	Dissolved salts and microbes
39. What is potable water?	Water that is safe to drink
40. Why is potable water not pure?	Because it contains dissolved substances
41. How do we produce potable water?	Choose an appropriate source Pass it through a filter bed Sterilise it
42. What two things can we use as sterilising agents?	Chlorine and ultraviolet light
43. What is desalination and when is it used?	Removal of salt it is used when fresh water supplies are limited
44. What do we need to remove from waste water?	Organic matter and harmful microbes
45. What do we do to glass that we recycle?	Crush and melt it
46. What do we do to metal that we recycle?	Melt and recast it
Higher Tier	
47. What is phytomining?	Using plants to absorb metal compounds, the plants are then burnt
48. What is bioleaching?	Using bacteria to produce leachate solutions containing metal compounds

Triple	
Corrosion and Alloys	
49. What is corrosion?	The destruction of metals by chemical reactions with substances
50. Which three coatings can we apply to prevent corrosion?	Grease, paint, electroplating
51. What is bronze an alloy of?	Copper and tin
52. What is brass an alloy of?	Copper and zinc
53. What is gold used in jewellery mixed with to make an alloy?	Silver, copper and zinc
54. How many carats is 75% gold?	18 carat
55. What is steel an alloy of?	Iron, carbon and other metals
56. What are the two properties of high carbon steel?	Strong and brittle
57. What are the two properties of low carbon steel?	Soft and easily shaped
58. Which elements make up stainless steel?	Chromium and nickel
Ceramics, Polymers and Composites	
59. What is most of the glass we use called? What is it made up of?	Soda-lime glass. Sand, sodium carbonate and limestone
60. What two things alter the properties of polymers?	The monomers that they are made from and the conditions under which they are made
61. Which type of polymer melts when heated?	Thermosoftening
62. Describe the structure of thermosoftening polymers	Polymer chains with weak forces of attraction between chains
63. Describe the structure of thermosetting polymers	Polymer chains held together by cross links
64. What are composites made up of?	A matrix or binder called the reinforcement
The Haber Process and NPK Fertilisers	
65. What is the Haber process used for?	To manufacture ammonia to produce fertilisers
66. Which two raw materials are used in the Haber process? Where do they come from?	Nitrogen and hydrogen
67. Which catalyst is used in the Haber process?	An iron catalyst
68. What are the conditions used for the Haber process?	High temperature - 450^{o}C High pressure – about 200 atmospheres
69. What is done with the unreacted hydrogen and nitrogen?	It is recycled
70. Which three elements do NPK fertilisers contain compounds of?	Nitrogen, phosphorus, and potassium
71. How do we obtain potassium chloride, potassium, sulfate and phosphate rock?	By mining
72. What do we treat phosphate rock with to enable it to be used as a fertiliser?	With nitric or sulphuric acid