

Topic 10

1. What do humans use the Earth's resources for?	To provide warmth, shelter, food and transport.
2. What is the difference between a finite and a renewable resource?	<p>A finite resource is being used up at a faster rate than they can be replaced e.g. fossil fuels.</p> <p>A renewable resource is one that can be replaced at the same rate at which they are being used up e.g. biofuels.</p>
3. How are chemists contributing to improved agricultural and industrial processes?	Chemists are looking to minimise the use of finite resources, use of energy, waste and environmental impact in the manufacture of products.
4. What is potable water?	Potable water is water that is safe to drink.
5. How is potable water produced?	<p>The production of potable water involves:</p> <ul style="list-style-type: none"> - Choosing an appropriate source of freshwater. - Passing the water through filter beds. - Sterilising the water using Chlorine, Ozone and UV light.
6. If there is a shortage of freshwater, what process will be used?	Desalination of salty water or seawater will provide freshwater. Distillation or reverse osmosis will be used to extract freshwater, they both use large amounts of energy.
7. What is the difference between potable water and pure water?	Potable water has dissolved substances in it, whereas pure water has no dissolved substances in it.
8. What processes are involved in treating wastewater to make it potable?	<p>The processes involved in treating waste water:</p> <ul style="list-style-type: none"> - Screening and grit removal - Sedimentation to produce sewage sludge and effluent - Anaerobic digestion of sewage sludge - Aerobic biological treatment of effluent.
9. What is the purpose of the Life Cycle Assessments (LCA's)?	The purpose of Life Cycle Assessments is to assess the environmental impact of products.

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10. What is a problem with LCA's?	LCA's can be devised to evaluate a product but these can be misused to reach predetermined conclusions e.g. in support of claims for advertising purposes.
11. Why is it important to reduce, reuse and recycle?	If we reduce, reuse and recycle this helps to sustain the use of limited resources & energy sources.
12. What materials are formed from limited raw materials?	Metals, glass, building materials, clay ceramics and plastics are produced from limited raw materials.
13. What are the environmental impacts of quarrying and mining?	Huge scars in the landscapes, noise, dust and destruction of habitats.
14. How is glass recycled?	Glass can be crushed and melted to make other glass products.
15. How are metals recycled?	Metals are recycled by melting, recasting or reforming into different products.
16. What is the amount of separation dependent on when recycling metals?	The amount of separation is dependent on the material and the properties required e.g. scrap steel can be added to iron in the Blast Furnace to reduce the amount of iron that needs to be extracted from iron ore.
17. What does the process of phytomining involve?	Phytomining uses plants to absorb metal compounds. The plants are harvested and burned to produce ash that contains metal compounds.
18. How is bioleaching used to extract Copper?	Bacteria are used to produce leachate solutions that contain metal compounds. Displacement or electrolysis is used to extract the copper.
19. What is corrosion?	The destruction of materials by chemical reactions with substances in the environment.
20. What 2 reactants are needed for rusting?	Air (Oxygen) and water

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21. What methods can be used to prevent corrosion?	<ul style="list-style-type: none"> - Applying a coating that acts a barrier e.g. greasing, painting or electroplating. - Sacrificial protection - a more reactive metal is used to protect the metal e.g. zinc is used to galvanise iron
22. What is an alloy?	An alloy is a mixture of metals e.g. Bronze is an alloy of Copper and Tin. Brass is an alloy of Copper and Zinc.
23. What is gold measured in?	Gold is measured in carats, it is usually an alloy mixed with silver, copper and zinc. 24 carat is 100% pure gold, 18 carats 75% gold.
24. What is steel?	Steel is an alloy of iron containing different amounts of Carbon.
25. What is the difference between soda-lime glass and borosilicate glass?	The difference is that soda-lime glass is made by heating a mixture of sand, sodium carbonate and limestone. Borosilicate glass is made from sand and boron trioxide which melts at a higher temperature than soda-lime glass.
26. How are clay ceramics made?	They are made by shaping wet clay and heating in a furnace.
27. What are the properties of polymers dependent on?	The properties are dependent on the monomers they are made from and the conditions under which they are made e.g. low density or high density polythene.
28. What is the difference between thermosetting and thermosoftening polymers?	A thermosoftening polymers melt when they are heated, thermosetting do not melt when heated.
29. What are composites?	Composites are made of 2 materials, a matrix or binder surrounding and binding together fibres or fragments of the other material, which is called the reinforcement.
30. Name examples of composites.	Plywood, MDF, concrete
31. What is the purpose of the Haber Process?	To manufacture Ammonia

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32. What are the reactants and conditions needed for the manufacture of Ammonia?	Reactants: Nitrogen & Hydrogen Conditions: Temperature: 450°C Pressure: 200 atmosphere Catalyst: Iron
33. What type of reaction makes Ammonia?	Reversible reaction
34. What elements are involved in making fertilisers?	Nitrogen, phosphorus and potassium are used in fertilisers.
35. What are NPK fertilisers?	They are formulations of various salts containing appropriate percentages of the elements.
36. What chemical is involved in making ammonium salts and nitric acid?	Ammonia
37. How are potassium chloride and potassium sulfate obtained?	By mining
38. How is phosphate rock made into fertilisers?	Phosphate rock is treated with Nitric Acid or Sulfuric Acid which produce salts.