**Design & Technology**

**AQA GCSE** Logo

Description automatically generated with low confidence

**Sustainability**

**Materials required for questions**

* Pencil
* Rubber
* Calculator

**Instructions**

* Use black ink or ball-point pen
* Try answer all questions
* Use the space provided to answer questions
* Calculators can be used if necessary
* For the multiple choice questions, circle your answer

**Advice**

* Marks for each question are in brackets
* Read each question fully
* Try to answer every question
* Don’t spend too much time on one question

**Good luck!**

**Q1.** Which one of the following is a finite resource

**A** Solar PV

**B** Gas

**C** Offshore wind

**Q2.** Which one of the following has a positive impact on the environment?

**A** Pollution

**B** Reducing waste

**C** Reducing renewable energy usage

**Q3.** What is the primary ecological concern associated with extracting finite resources like rare earth metals?

**A** They release oxygen during extraction

**B** The mining process often destroys habitats and creates toxic waste

**C** Their extraction improves soil quality

**Q4.** What makes plastic waste particularly problematic compared to other types of waste?

**A** It decomposes quickly in marine environments

**B** It breaks down into microplastics that persist for centuries

**C** It's always biodegradable

**Q5.** Which waste disposal method is generally considered most environmentally friendly when properly managed?

**A** Open burning

**B** Ocean dumping

**C** Sanitary landfill with methane capture

**Q6.** What is the fundamental problem with treating non-finite resources as if they were infinite?

**A** Even renewable resources can be depleted if consumption exceeds regeneration

**B** It makes them more expensive

**C** They automatically become finite

**Q7.** Which factor most significantly limits the potential of recycling to address finite resource depletion?

**A** Entropy - materials degrade in quality with each recycling cycle

**B** All materials can be recycled indefinitely without quality loss

**C** Recycling processes consume no energy

**Q8.** What is the primary reason that many renewable energy technologies still depend on finite resources?

**A** They require rare earth elements for magnets and batteries

**B** Sunlight and wind are actually finite resources

**C** No non-finite resources are needed for their construction

**Q9.** Explain the disadvantages of extracting fossil fuels as a source of energy **(3 marks)**

**Answers**

**Q1**. B

**Q2**. B

**Q3**. B

**Q4**. B

**Q5**. C

**Q6**. A

**Q7**. S

**Q8**. A

**Q9.**

* Mining of coal produces lots of waste (slag heaps) and pollution (of water courses).
* Visual pollution associated with open cast mining, location of power plants near rivers (water needed for cooling).
* Pollution associated with extraction of fossil fuels deep in the ground leads to atmospheric pollution.
* Shale gas extracted by pumping pressurised water and chemicals deep into the ground is believed to cause earthquakes/seismic shocks and damage to water courses.
* Drilling for oil can lead to pollution of marine ecosystems and pollution, eg Deepwater Horizon disaster in 2010 in the Gulf of Mexico.