

Design & Technology

AQA GCSE

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.