

Air, pollution and clean water resources

Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · Test answers (mark scheme)

Use this guide to mark the test out of 20. Give one mark for each correct point, name or formula. Accept any other correct wording, and do not penalise either British or American spelling.

Level: Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · **Curriculum:** HS-ESS3-6, GCSE C9-C10

Question 1 Gases in air (3 marks)

- a. **Nitrogen.**
- b. **Oxygen, about 21 %.**
- c. **Argon.**

Marking: 1 mark each.

Question 2 Greenhouse effect (3 marks)

- a. **Carbon dioxide and methane.**
- b. They absorb infrared radiation from the warm surface and send part of it back to the Earth, so less heat escapes to space.

Marking: a. 1 mark. b. 1 mark for absorbing infrared, 1 mark for sending it back.

Question 3 Carbon monoxide (2 marks)

It forms by incomplete combustion when there is not enough oxygen. It is toxic because it binds to haemoglobin and stops the blood carrying oxygen.

Marking: 1 mark each.

Question 4 Acid rain (3 marks)

- a. **Sulfur dioxide.**
- b. **Acid rain** that damages trees, buildings and lakes.
- c. Remove sulfur from the fuel, or use a scrubber on the power station waste gases.

Marking: 1 mark each.

Question 5 Potable water (2 marks)

Potable water is safe to drink but contains dissolved minerals and possibly chlorine. Pure

water contains only H₂O.

Marking: 1 mark for safe to drink, 1 mark for pure water only H₂O.

Question 6 Water treatment (3 marks)

The water passes through screens, then settling and a sand and gravel filter bed to remove solids. Chlorine is added to kill microbes.

Marking: 1 mark for filtering, 1 mark for sterilising, 1 mark for killing microbes.

Question 7 Volume calculation (2 marks)

$0.04 \div 100 \times 250 = \mathbf{0.10 \text{ dm}^3}$ (100 cm³).

Marking: 1 mark for method, 1 mark for the answer with unit.

Question 8 Life cycle stages (2 marks)

Getting raw materials, manufacturing, use, and disposal.

Marking: Half a mark each; 2 marks for all four.