

Telling physical and chemical changes apart

Grade 7 science (Year 8 · Class 7) · Test answers (mark scheme)

Model answers and the marking guide are given below. Award the mark for correct science even when the wording differs. Always look for a reason that mentions a new substance, and accept sensible alternative examples.

Level: Grade 7 science (Year 8 · Class 7) · **Curriculum:** MS-PS1-2

Question 1 Defining the changes (2 marks)

- a) A change that alters shape, size or state but makes no new substance.
- b) A change in which one or more new substances are made.

Marking: 1 mark each.

Question 2 Classify three changes (3 marks)

- a) **Physical.**
- b) **Chemical.**
- c) **Physical.**

Marking: 1 mark each.

Question 3 Signs and boiling (2 marks)

- a) Any two from: gas bubbles, colour change, new solid forming, heat or light, new smell.
- b) The bubbles are water vapour, which is the same substance as the liquid, so **no new substance is made.**

Marking: 1 mark for two correct signs; 1 mark for water vapour or no new substance.

Question 4 Word equation (3 marks)

- a) **sulfur + oxygen → sulfur dioxide.**
- b) **Sulfur dioxide.**

Marking: 1 mark for the reactants, 1 mark for the arrow and product; 1 mark for part b.

Question 5 Heating sugar (3 marks)

- a) The sugar turns brown then black, and it gives off a burnt smell, smoke and water droplets (any two).
- b) **No**, the black solid is a new substance.

Marking: 1 mark for each observation; 1 mark for no.

Question 6 Dissolving or burning (3 marks)

Dissolving makes no new substance: the salt particles spread among the water and the salt can be recovered by evaporating it. Burning wood makes new substances (carbon dioxide, water vapour, ash) with different properties, and the wood cannot be recovered. A new substance means a chemical change.

Marking: 1 mark for no new substance in dissolving; 1 mark for new substances in burning; 1 mark for linking this to the type of change.

Question 7 Metals in acid (2 marks)

a) **P and R.**

b) Gas bubbles and the shrinking metal show that new substances are made. Q shows no clues of a reaction.

Marking: 1 mark each.

Question 8 A rusting nail (2 marks)

Rusting makes a new substance: the iron joins with oxygen and water to form rust, which is orange, flaky and not magnetic like iron. Looking similar in shape does not matter, only whether a new substance is made.

Marking: 1 mark for new substance; 1 mark for a property that has changed.