Year 8 Chemical Reactions Worksheet - Mark Scheme

Year 8 · KS3 Chemistry · Changes, word equations, conservation of mass and energy

Section A: Physical and chemical changes [15 marks]

1	Physical; chemical; physical; chemical; chemical; physical; physical (a mixture, no new substance); chemical. Guidance: 1 mark each.	**8**
2	Any three: temperature change; colour change; gas given off (fizzing or bubbles); a solid forms (precipitate); light, flame or sound produced. Guidance: 1 mark each.	**3**
3	In a chemical change new substances are made (1). In a physical change no new substance is made, only the state or arrangement changes (1).	**2**
4	(a) A substance that is used up / starts the reaction (1). (b) A substance that is made in the reaction (1).	**2**

Section B: Word equations and gas tests [12 marks]

5(a)	magnesium oxide	**1**
5(b)	iron sulfide	**1**
5(c)	water	**1**
5(d)	zinc chloride	**1**
5(e)	carbon dioxide	**1**
5(f)	hydrogen	**1**
5(g)	copper oxide	**1**
6	Hydrogen: lit splint, squeaky pop. Carbon dioxide: bubble through limewater, turns milky or cloudy. Oxygen: glowing splint, relights. Guidance: 1 mark for each gas (test and result both correct).	**3**
7	A reaction where one substance breaks down into two or more simpler substances when heated (1). Example: copper carbonate or calcium carbonate (1).	**2**

Section C: Conservation of mass and balancing equations [15 marks]

8	In a chemical reaction the total mass of the reactants equals the total mass of the products (no atoms are made or destroyed).	**1**
9(a)	Carbon dioxide gas escaped into the air.	**1**
9(b)	5.0 ? 2.8 = 2.2 g	**1**
9(c)	5.0 g, because no gas can escape and mass is conserved.	**1**
10	Magnesium combines with oxygen from the air (1) to make magnesium oxide (1). Mass of oxygen = 0.40 ? 0.24 = 0.16 g (1).	**3**

11(a)	$2H_2 + O_2 \longrightarrow 2H_2O$ Guidance: 1 mark for each correct number set; accept full balanced equation.	**2**
11(b)	$2Mg + O_2 \longrightarrow 2MgO$	**2**
11(c)	$2Na + Cl_2 \longrightarrow 2NaCl$	**2**
11(d)	$CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$	**2**

Section D: Energy changes and burning [13 marks]

12	Exothermic: gives out energy to the surroundings so the temperature rises (1). Endothermic: takes in energy from the surroundings so the temperature falls (1).	**2**
13	Exothermic; endothermic; exothermic; endothermic. Guidance: 1 mark each.	**4**
14(a)	7 °C	**1**
14(b)	Endothermic	**1**
14(c)	Instant cold packs for sports injuries.	**1**
15	Heat, fuel and oxygen (1 mark for any two, 2 marks for all three). The lid stops oxygen reaching the fire (1). So the fire goes out (1). Guidance: Max 4 marks.	**4**

Total: 55 marks. Accept any scientifically correct alternative wording.