Hillcrest High School

Grade 10

PHYSICAL SCIENCE P2 memo

Nov 2025

1.1 C ✓ ✓
1.2 A ✓✓
1.3 D✓✓
1.4 A✓✓
1.5 B✓✓
1.6 C✓✓
1.7 A✓✓
1.8 A✓✓
1.9 A✓✓

2.1.1 Phosphorus✓

2.2.2 gold / cobalt ✓

2.2.3 cobalt ✓

2.2.4 silicon ✓

2.21 Physical ✓ there is no chemical change ✓

2.2.2 a) distillation

b) decantation

2.2.3 a) B

b) C

2.3.1 Halogen

2.3.2 F

2.3.3 D- Mg ✓

E – N ✓

2.4.1 metallic ✓ bonding

2.4.2 electrons are not fixed in place (sea of electrons) and can flow freely to conduct electricity ✓ (reason)

QUESTION 3

3.1 Atoms of the same element having the same number of protons and different numbers o neutrons ✓✓

3.2.1 Silver ✓✓

3.2.2 $ram = \frac{mass\ x\ \% + mass\ x\ \%}{100}$

108 ✓ $= \frac{106{,}9 \times 50\% ✓ + x \times 50\% ✓}{100}$ ✓

X = 109,1 amu ✓

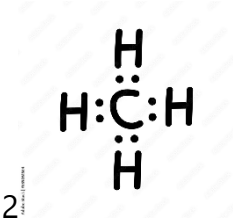
3.3.1 silicon ✓

3.3.2 4 ✓

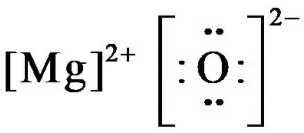
3.3.3 8 ✓

3.3.4 ✓ (-3)

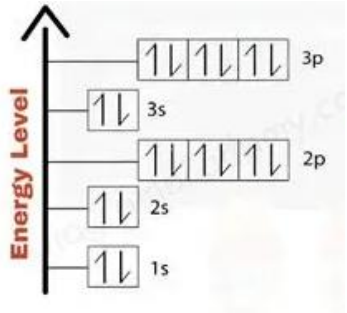
3.4.1 covalent ✓

3.4.2  ✓✓

3.4.3 ionic ✓

3.4.4  ✓✓

3.5



✓✓✓

QUESTION 4

4.1 30°C ✓

4.2 The average kinetic energy ✓ of particles in a substance ✓

4.3.1 30 – 40 minutes

4.3.2 0-5 minutes

4.4 the average kinetic energy remains constant ✓ and the potential energy increases ✓

4.5 the average kinetic energy of the particles decreases ✓ and the particles move closer together ✓

QUESTION 5

5.1 Exothermic ✓

5.2 A – energy released by reaction / ΔH ✓

B – activation energy/Ea

5.3 A – stay the same

B – decrease

QUESTION 6

6.1 One mole of any gas occupies the same volume at the same temperature and pressure ✓✓

$CaCO_3$	2HCl	$CaCl_2$	CO_2
6.2	n = c.V✓ = 4 (0,025) ✓ = 0,1 mol		0,1 mol ÷ 2 x 1✓ = 0,05 mol m = n.M✓ = 0,05 (111) ✓ = 5,55 g
6.3			0,1 mol ÷ 2 x 1✓ = 0,05 mol V= n.Vm = 0,05(22,4) ✓ = 1,12 dm^3✓

6.4			%yield = $\frac{actual}{theoretical} x\ 100$ 93 ✓= $\frac{actual}{1{,}12} x\ 100$✓ Actual = 1,04 dm^3✓

QUESTION 7

7.1

$n = \frac{m}{M}$ ✓

=112/56 ✓

=2mol (÷ 2)

For S: 176 -112 = 64g

n = m/M

=64 ✓ / 32 ✓

= 2

Fe : S

2: 2 (÷ 2)

FeS ✓

7.2

LHS	RHS
(12 x 6 + 1 x 12 + 16 x 6) + 6 x (16 x 2) ✓	6 x (12 + 2x 16) + 6 x (1 x 2 + 16) ✓
372 ✓	372 ✓
LHS = RHS therefore law of conservation of mass is upheld ✓	

QUESTION 8

8.1 compound that increases the concentration of hydroxide ion (OH −) in aqueous solution ✓✓

8.2.1 $Ca + \mathbf{2}HNO_3 \rightarrow Ca(NO_3)_2$ ✓ + H_2 ✓ ✓bal

8.2.2 $\mathbf{3}HCl + Al(OH)_3 \rightarrow AlCl_3$ ✓+ $\mathbf{3}H_2O$ ✓ ✓bal

8.3 H_2SO_4 ✓ + $ZnCO_3$ ✓ → $ZnSO_4$ ✓ + H_2O ✓ + CO_2 ✓

QUESTION 9

9.1.1 Fe_2O_3 ✓✓

9.1.2 KNO_3 ✓✓

9.2.1 Sodium carbonate ✓✓

9.2.2 carbon tetrafluoride ✓✓