10 Science June 2022 P2 Memo

1.1 A✓✓ 1.2 B✓✓ 1.3 C✓✓ 1.4 C✓✓

2.1 Mixture – impure and different substances blended in any proportion/ratio ✓
Compound – pure, and two or more elements chemically bonded in fixed ratio ✓

2.2.1 E ✓ 2.2.2 H ✓ 2.2.3 D ✓ 2.2.4 F ✓ 2.2.5 B ✓ 2.2.6 J ✓

3.1 What is the relationship between the temperature and time for the cooling of stearic acid?✓✓

3.2 Temp✓

3.3 solidification (or freezing)✓ or liquid → solid

3.4 The particles release energy ✓as they move closer together and this causes the potential energy of the particles to decrease and not the kinetic energy (which will cause the temp. to drop) ✓ OR E_k remains constant

3.5 Temp decrease, thus decrease the average kinetic energy of the particles✓, thus particles move slower✓ OR particles move closer together OR vibrates about fixed position.

3.6 67-68✓

3.7 solid✓

4.1.1 Dalton ✓

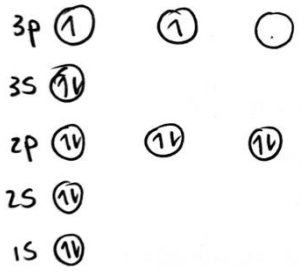
4.1.2 Rutherford ✓

4.2 $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$ ✓✓

4.3.1 Isotopes are atoms of the same element with different number of neutrons✓ (or mass number) but same number of protons ✓ (or atomic number) (the first part needs to make sense)

4.3.2 RAM = $\frac{92{,}2297 \times 28 + 4{,}6832 \times 29 + 3{,}0872 \times 30}{100} = 28{,}1086\ (g.mol^{-1})$ ✓ ✓ (if wrong unit 2/2)

4.3.3



✓ (labels) ✓(correct filling)

5.1.1 sulfur ✓

5.1.2 argon ✓

5.1.3 boron ✓

5.1.4 nitride, oxide, flouride ✓(names changed) and sodium ion, magnesium ion, aluminium ion ✓

(if N^{3-}, O^{2-}, F^- (any 1) and Na^+, Mg^{2+}, Al^{3+} (any 1) given, then 1/2)

5.1.5 aluminium ✓

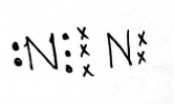
5.2.1 The energy required per mole of substance to remove an electron from the atom ✓ ✓

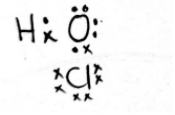
5.2.2 (a) low Ionisation energy ✓ ✓

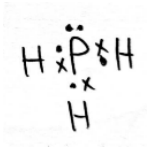
(b) very high IE, / not removing electron easily✓ ✓

5.2.3 the second electron will have to be removed from a filled energy level, electrons are attracted strongly to the positive nucleus ✓ ✓

6.1 The overlapping of half-filled orbitals in the non-metals resulting in the sharing of electrons to form a molecule ✓ ✓

6.2.1  ✓ (lone pairs) ✓(bond pairs)

6.2.2  ✓ ✓ (di) (Accept if linear shape; only in gr. 10)

6.2.3  ✓ ✓ (di)

6.3.1 polar ✓

6.3.2 ΔEN = 0,9 ✓ : the Cl atom attracts the bonding electrons more than H, asymmetric electron cloud ✓ $\delta^+ H - Cl \delta^-$ ✓

6.4.1 attraction between the postive cations and the sea of delocalised (valence) electrons ✓ ✓

6.4.2 delocalized valence electrons ✓ are free to move ✓ in a conductor (from high to low potential energy)

6.5 $K \rightarrow [K]^+ + e^-$ ✓

$F + e^- \rightarrow [F]^-$ ✓

$K^\bullet$ ✓ +  ✓ $\rightarrow [K]^+ [$ $]^-$ ✓

6.6.1 Na_2SO_4 ✓

6.6.2 $(NH_4)_2CO_3$ ✓

6.6.3 NO_2 ✓

6.7 ΔEN = 2,2 which is more than 1,7. ✓ The Cl atom attracts the bonding electrons strongly, removing the e^- from K, to form Cl^- and K^+ , which then attract each other✓ (with a Coulomb/electrostatic force.)

6.8 formula unit ✓ (or crystal lattice / ionic lattice)