Periodieke Tabel Memo
November 2018

1.5 A ✓✓ (2)

4.3.1 Rb_2O ✓✓ (2)

4.3.2 Rb is in the same group as P / Na✓ /*Rb is in dieselfde groep as P/ Na*
OR/OF Rb is in group 1/*Rb is in groep 1*
∴ has the same valency as P/ Na. ✓/ ∴ *het dieselfde valensie as P/ Na.* (2)

4.4 Increases. ✓/*Neem toe*
From P to R, the atomic radius gets smaller. ✓ **OR/OF** The outer electrons get closer to the nucleus.
Van P na R raak die atomiese radius kleiner./Die buite-elektrone kom nader aan die kern.
The attraction between the nucleus and the outer electron gets stronger ✓ ∴ more energy is needed to remove the electrons. ✓/*Die aantrekkingskrag tussen die kern en die buite-elektrone raak sterker ∴ meer energie is nodig om die elektrone te verwyder.* (4)

1.5 C ✓✓ (2)

QUESTION 3/*VRAAG 3*

3.1 Energy needed per mole to remove an electron from an atom in a gaseous phase. ✓✓
Energie benodig per mol om 'n elektron uit 'n atoom in die gasfase te verwyder. ✓✓ (2)

3.2 Ionisation energy increases from left to right, across a period. ✓✓
Ionisasie energie neem toe van links na regs oor 'n periode. ✓✓ (2)

3.3.1 Be:$1s^2\ 2s^2$✓✓
B:$1s^2\ 2s^2\ 2p^1$✓✓ (4)

3.3.2 B has a 2p energy level; 2p has a higher energy than 2s. ✓
Therefore less energy is needed to remove the valence electrons from B as from Be✓✓.
B het 'n 2p energievlak; 2p het meer energie as 2s ✓
Dus minder energie word benodig om 'n valenselektron van B te verwyder in vergelyking met Be. ✓✓

OR/*OF*

2s electrons are paired and 2p electron is unpaired. ✓ Therefore, less energy needed to remove 2p electron. ✓✓
Die 2s elektrone is gepaard teenoor die ongepaarde 2p elektrone. ✓ *Daarom word minder energie benodig om 'n 2p elektron te verwyder.* ✓✓

OR/OF

The 2p electron is further away from the nucleus ✓. Therefore, the electrostatic force weaker and requires less energy. ✓✓
Die 2p electron is verder van die kern✓*, dus is die elektrostatiese krag swakker en daarom word minder energie benodig om die elektron te verwyder.* ✓✓ (3)

3.4 False✓ The energy is high because of filled s and p-orbitals. ✓/
Vals✓ *Die energie is hoog agv die gevulde s- en p-orbitale.*✓ (2)

3.5.1 Alkali-metals✓
Alkali-metale✓ (1)

3.5.2 Reactivity increases from top to bottom✓✓
Reaktiwiteit verhoog van bo na onder in die groep.✓✓ (2)

3.5.3 Ionisation energy decreases, ✓ thus less energy to remove an electron. Therefore, reactivity increases. ✓
Ionisasie-energie neem af✓*, daarom word minder energie benodig om 'n elektron te verwyder. Reaktiwiteit neem dus toe.* ✓ (2)
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Periodieke Tabel Memo
November 2016

1.1 C ✓✓ (2)

1.7 B ✓✓ (2)

QUESTION 4/*VRAAG 4*

4.1 Ionisation energy is the energy needed to remove an electron from (one mole) of an atom✓✓ in a gaseous phase.
Ionisasie-energie is die energie benodig om 'n elektron uit (een mol) van 'n atoom in 'n gasfase te verwyder. (2)

4.2 4.2.1 Metals have lower first ionisation energy than non-metals✓✓, therefore metals would rather lose electrons to form a positive ion (cation).
Metale het laer eerste ionisasie-energie as nie-metale, daarom sal metale eerder elektrone verloor om 'n positiewe ioon (katioon) te vorm. (2)

4.2.2 Non-metals have higher first ionisation energy than metals✓✓, therefore non-metals would rather gain electrons to form the negative ions (anions).
Nie-metale het hoër eerste ionisasie-energie as metale, daarom sal nie-metale eerder elektrone opneem om die negatiewe ione (anione) te vorm. (2)

4.3 The second electron is removed from the energy level very close to the nucleus (atomic radius decreases), therefore the force of attraction between the electron and the nucleus is stronger✓ hence more energy is needed to remove the second electron✓.
OR
When lithium loses its first electron, it attains a stable electron configuration✓, hence more energy is needed to remove the second electron✓.

Die tweede elektron word verwyder van die energievlak wat naby aan die kern is (atoomradius verminder), dus is die aantrekkingskrag tussen die elektron en die kern sterker. Daarom word meer energie benodig om die tweede elektron te verwyder.
OF
Wanneer litium die eerste elektron verloor, verkry dit 'n meer stabiele elektronkonfigurasie. Daarom word meer energie benodig om die tweede elektron te verwyder. (2)

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Periodieke Tabel Memo
November 2015

QUESTION 5/*VRAAG 5*

5.1

5.1.1 The ionisation energy is the energy needed/absorbed to remove an electron, ✓ whilst electron affinity is energy released when an electron is taken in. ✓
Die ionisasie energie is die energie benodig/geabsorbeer om 'n elektron te verwyder, terwyl elektronaffiniteit die energie is wat vrygestel word wanneer 'n elektron opgeneem word. (2)

5.1.2 Increase in effective nuclear charge from left to right in period. ✓
Toename in effektiewe kernlading van links na regs in 'n periode.

OR/*OF*

Decrease in atomic radius from left to right in a period. ✓
Afname in atoomradius van links na regs in 'n periode. (1)

5.1.3 Higher than/*Hoër as* ✓
Losing a second electron will result in an unstable electron structure for sodium, ✓ whilst losing a second electron will result in a stable/noble gas electron structure for magnesium. ✓
Verlies van 'n tweede elektron sal tot 'n onstabiele elektronstruktuur vir natrium lei, terwyl verlies van 'n tweede elektron tot 'n stabiele/edelgas elektronstruktuur vir magnesium sal lei. (3)

5.1.4
$$n = \frac{m}{M}$$
$$= \frac{46}{23} \checkmark$$
$$= 2 \text{ mol}$$

Energy needed/*Energie benodig* = 2 x 496 ✓
= 992 kJ ✓ (3)

5.1.5 Chlorine/*Chloor* ✓
Highest electron affinity/*Hoogste elektronaffiniteit* ✓

OR/*OF*

Releases the most energy./*Stel die meeste energie vry.* (2)