

Province of the

**EASTERN CAPE**

EDUCATION

**NASIONALE**

**SENIOR SERTIFIKAAT**

**GRAAD 11**

**NOVEMBER 2010**

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| **FISIESE WETENSKAPPE V2**  **MEMORANDUM** |

**PUNTE: 150**

**TYD: 3 uur**

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| Hierdie memorandum bestaan uit 7 bladsye. |

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| **AFDELING A** | | | |  |
|  | | | |  |
| **VRAAG 1 EEN WOORD ITEMS** | | | |  |
| 1.1 | Datief kovalente binding ✓ 11.2.1 | | | (1) |
| 1.2 | Boyle se Wet 🗸 11.2.1 | | | (1) |
| 1.3 | Empiriese formule 🗸 11.2.1 | | | (1) |
| 1.4 | Standaardoplossing 🗸 11.2.1 | | | (1) |
| 1.5 | Oksideermiddel 🗸 11.2.1 | | | (1) |
|  |  | | | **[5]** |
| **VRAAG 2: MEERVOUDIGEKEUSE-VRAE** | | | |  |
|  | |  | |  |
| 2.1 | | B🗸🗸 11.1.3 | | (2) |
| 2.2 | | A🗸🗸 11.2.2 | | (2) |
| 2.3 | | C🗸🗸 11.2.3 | | (2) |
| 2.4 | | D🗸🗸 11.1.2 | | (2) |
| 2.5 | | D🗸🗸 11.1.2 | | (2) |
| 2.6 | | C🗸🗸 11.2.2 | | (2) |
| 2.7 | | A🗸🗸 11.1.3 | | (2) |
| 2.8 | | B🗸🗸 11.2.1 | | (2) |
| 2.9 | | B🗸🗸 11.2.1 | | (2) |
| 2.10 | | C🗸🗸 11.3.3 | | (2) |
|  | |  |  | **[20]** |
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|  | |  | **TOTAAL AFDELING A:** | **25** |

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| **VRAAG 3** | | | | | | | |  | |
|  |  | | | |  | | |  | |
| 3.1 | 3.1.1 | | | | H O H ✓ ✓ 11.2.3 | | | (2) | |
|  |  | | | |  | | |  | |
|  | 3.1.2 | | | | O C O ✓ ✓ 11.2.3 | | | (2) | |
|  |  | | | |  | | |  | |
|  | 3.1.3 | | | | N N ✓ ✓ 11.2.3 | | | (2) | |
|  |  | | | | | | |  | |
| 3.2 | 3.2.1 | | | | Nie-polêr ✓ ✓ 11.2.3 | | | (2) | |
|  |  | | | |  | | |  | |
|  | 3.2.2 | | | | Polêr ✓✓ | | | (2) | |
|  |  | | | |  | | |  | |
|  | 3.2.3 | | | | Polêr ✓✓ | | | (2) | |
|  |  | | | | | | |  | |
| 3.3 | 3.3.1 | | | | Bindingsenergie ✓ [11.2.1] | | | (1) | |
|  |  | | | |  | | |  | |
|  | 3.3.2 | | | | Energie geabsorbeer om bindings te breek.  N Ξ N + 3 x H - H  941 kJ.mol-1 ✓ + 3 x 436 kJ.mol-1 ✓ = 2249 kJ.mol-1  Energie vrygestel wanneer bindings gevorm word.  6 x N – H  6 x 389 kJ.mol-1 ✓ = 2334 kJ.mol-1  ∆H = Energie geabsorbeer om bindings te breek - Energie vrygestel wanneer bindings gevorm word✓  = 2249 kJ.mol-1✓ - 2334 kJ.mol-1 ✓  = -85 kJ.mol-1✓ 11.1.3 | | | (7) | |
|  |  | | | |  | | |  | |
|  | | | |  | | | | |  |
| 3.4 | | | 3.4.1 | | | | A = + ∆H ✓  B = - ∆H ✓ 11.2.3 | (2) | |
|  | | |  | | | |  |  | |
|  | | | 3.4.2 | | | | Grafiek -2✓ ; energie van produkte is groter as energie van reaktante ✓✓, Reaksie is endotermies | (3) | |
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| **VRAAG 4** | | | | | |  |
|  |  | | |  | |  |
| 4.1 | | | Wat is die verwantskap tussen temperatuur en druk vir ŉ ingeslote massa gas? ✓✓ 11.1.2 | | | (2) |
|  | | |  | | |  |
| 4.2 | | | P α T ✓✓ 11.2.3 | | | (2) |
|  | | |  | | |  |
| 4.3 | | | Volume van die gas. ✓ 11.2.3 | | | (1) |
|  | | |  | | |  |
| 4.4 | | | Temperatuur is ŉ maatstaf van die gemiddelde kinetiese energie van die deeltjies. ✓ Wanneer temperatuur toeneem, neem die spoed van die deeltjies toe, wat lei tot ŉ toename in die aantal effektiewe botsings. ✓ Die druk neem toe wanneer die aantal effektiewe botsings toeneem. ✓ 11.2.3 | | | (3) |
|  | | |  | | |  |
| 4.5 | | | t °C = 447 – 273 = 174 °C 11.1.3 | | | (6) |
|  | | |  | | |  |
| 4.6 | | | ✓ **OF**  100 x 103 ✓ X 1 x 10-3 ✓ = n x 8,31 x 298  = 0,04 mole✓    MSO2 = 32 + (2 x16) = 64 g.mol-1  n = ✓  0,04 = ✓  m = 0,04 x 64  = 2,56 g ✓ 11.1.3 | | | (7) |
|  | | |  | | |  |
| 4.7 | | | -273 °C✓ ; Absolute nulpunt✓ 11.2.3 | | | (2) |
|  | |  | | |  | **[23]** |

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| **VRAAG 5** | | | | | | |  |
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| 5.1 | Bepaal die molekulêre formule van etanoësuur. | | | | | |  |
| % massa (g) | | Atoommassa | Mol verh. n = m/M | Heelgetal verh. |
| 39,9  6,7  53,4 | | 12  1  16 | 39,9/12 = 3,325✓  6,7/1 = 6,7✓  53,4/16 = 3,375✓ | 3,325/3,325 = 1  6,7/3,325 = 2✓  3,375/3,325 = 1✓ |
|  | Empiriese formule =C H2 O✓  Empiriese formule massa = 12 +2 +16= 30 g.mol-1  Relatiewe molekulêre massa = 60 g.mol-1  n = = = 2✓  Molekulêre formule = n x empiriese formule = 2 (C H2 O) = C2 H4 O2✓ 11.1.3 | | | | | | (8) |
|  |  | | | | | |  |
| 5.2 | 5.2.1 | n = ✓ = ✓= 0,03 mol ✓ 11.2.3 | | | | | (3) |
|  |  |  | | | | |  |
|  | 5.2.2 | Swak suur ✓  Etanoësuur ioniseer slegs gedeeltelik in oplossing. ✓✓ 11.2.1 | | | | | (3) |
|  |  |  | | | | |  |
|  | 5.2.3 | 11.1.3 | | | | | (5) |
|  |  | | | | | | **[19]** |

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| **VRAAG 6** | | | | | | |  |
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| 6.1 | | | ŉ Stof wat elektrone verloor gedurende ŉ redoks reaksie. ✓✓ 11.2.1 | | | | (2) |
|  | | |  | | | |  |
| 6.2 | | | Zn → Zn2+ + 2e- ✓✓ 11.2.3 | | | | (2) |
|  | | |  | | | |  |
| 6.3 | | | Reduksie ✓ 11.2.1 | | | | (1) |
|  | | |  | | | |  |
| 6.4 | | | Redoks reaksie ✓✓  ✓ ✓  Zn + Cu2+ → Zn2+ + Cu ✓(balansering) 11.2.3 | | | | (5) |
|  | | | ✓ ✓ | | | |  |
| 6.5 | | | Mg + 2 H+ → Mg2+ + H2 ✓(balansering) 11.2.3 | | | | (3) |
|  | | |  | | | |  |
| 6.6 | | | H+ ✓ 11.2.1 | | | | (1) |
|  | | |  | | | |  |
| 6.7 | | | +3✓ 11.2.1 | | | | (1) |
|  | | |  | | | | **[15]** |
| **VRAAG 7** | | | | | | |  |
|  | |  | | | | |  |
| 7.1 | | Versadigde koolwaterstof. ✓  Bevat slegs enkelbindings (kovalente) tussen twee koolstof atome. ✓ 11.2.1 | | | | | (2) |
|  | | ✓ ✓ | | | | |  |
| 7.2 | | 2 C4H10 + 13 O2 → 8 CO2 + 5 H2O ✓(balansering) 11.2.3 | | | | | (3) |
|  | |  | | | | |  |
| 7.3 | | Organiese verbindings met dieselfde molekulêre formule, maar verskillende struktuurformules. ✓✓ 11.2.1 | | | | | (2) |
|  | |  | | | | |  |
| 7.4 | | ✓✓  ✓✓ | | |  | |  |
|  | | But-2-een✓ | | | But-1-een✓ 11.2.3 | | (6) |
|  | |  | | | | |  |
| 7.5 | | 7.5.1 | | ✓  ✓  ✓ | | 11.2.3 | (3) |
|  | |  | |  | | |  |
|  | | 7.5.2 | | 1,2-dibromo propaan ✓✓ 11.2.1 | | | (2) |
|  | |  | |  | | |  |
|  | | 7.5.3 | | Addisie reaksie ✓✓ 11.2.1 | | | (2) |
|  | |  | |  | | | **[20]** |
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| **VRAAG 8** | | | | | | |  |
|  | |  | |  | | |  |
| 8.1 | | Die natuurlike voorkoms van ŉ verbinding van ŉ metaal waaruit ekstraksie van die metaal plaasvind. ✓✓ 11.2.1 | | | | | (2) |
|  | |  | |  | | |  |
| 8.2 | | Koolstofmonoksied ✓ 11.2.1 | | | | | (1) |
|  | | ✓ ✓ | | | | |  |
| 8.3 | | Fe2O3 + 3 CO → 2 Fe + 3 CO2 ✓(balansering) 11.2.3 | | | | | (3) |
|  | |  | | | | |  |
| 8.4 | | Dit verwyder onsuiwerhede uit die erts as slak. ✓✓ 11.2.1 | | | | | (2) |
|  | |  | | | | |  |
| 8.5 | | CaSiO3 ✓✓ 11.2.1 | | | | | (2) |
|  | |  | | | | |  |
| 8.6 | | Vir die konstruksie van paaie. ✓✓  Vervaardiging van sement. ✓✓  Vervaardiging van boumateriaal. (enige twee) 11.3.3 | | | | | (4) |
|  | |  | |  | | | **[14]** |
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| **VRAAG 9** | | | | | | |  |
|  | |  | | | | |  |
| 9.1 | | Gasse (soos koolstofdioksied) veroorsaak die kweekhuis-effek deurdat dit die son se hitte in die laer atmosfeer vasvang. ✓✓ ŉ Toename in die konsentrasie van die kweekhuis gasse lei tot ŉ toename in die temperatuur op Aarde. ✓✓ 11.3.3 | | | | | (4) |
|  | |  | | | | |  |
| 9.2 | | Koolstofdioksied ✓, waterdamp ✓, metaangas ✓, oksiede van stikstof. (Enige drie) 11.3.1 | | | | | (3) |
|  | |  | | | | |  |
| 9.3 | | Gebruik van fossiel brandstowwe vir energie ✓  Verbranding van koolstof vir verskaffing van elektrisiteit ✓  Veeboerdery (Enige twee) 11.3.3 | | | | | (2) |
|  | |  | | | | | **[9]** |
|  |  | | |  | | |  |
|  |  | | | **TOTAAL AFDELING B:** | | | **125** |
|  |  | | |  | | |  |
|  |  | | | **GROOTTOTAAL:** | | | **150** |