education

Department of Education
FREE STATE PROVINCE

CONTROL TEST / *KONTROLETOETS*

GRADE 10 / *GRAAD 10*

PHYSICAL SCIENCES
FISIESE WETENSKAPPE

MEMORANDUM

MARCH 2020 / *MAART 2020*

MARKS: 75 / *PUNTE: 75*

TIME: 1½ HOURS / *TYD: 1½ UUR*

This memorandum consists of FIVE pages.
Hierdie memorandum bestaan uit VYF bladsye.

QUESTION 1

1.1 D ✓✓

1.2 D ✓✓

1.3 B ✓✓

1.4 B ✓✓

1.5 B ✓✓

1.6 A ✓✓

1.7 D ✓✓

1.8 B ✓✓

[16]

QUESTION 2 / *VRAAG 2*

2.1 A pure substance consisting of two or more different elements. ✓✓

'n Suiwer stof bestaande uit twee of meer verskillende elemente. (2)

2.2 A mixture of uniform composition and in which all components are in the same phase. ✓✓

'n Mengsel van uniforme samestelling en waarin alle komponente in dieselfde fase is. (2)

2.3.1 C ✓ (1)

2.3.2 A✓ & C ✓ (2)

2.3.3 D✓ & E✓ & B (any two/*enige twee*) (2)

2.3.4 B ✓ (1)

2.3.5 A or/*of* C ✓ (1)

2.3.6 E ✓ (1)

2.3.7 D ✓ (1)

[13]

QUESTION 3 / *VRAAG 3*

3.1 The temperature at which a solid, given sufficient heat, becomes a liquid. ✓✓

Die temperatuur waar 'n vaste stof, indien dit voldoende hitte verkry, 'n vloeistof word. (2)

3.2 Temperature/*Temperatuur* ✓ (1)

3.3 Boil/*Kook* ✓ (1)

3.4 Liquid/*Vloeistof* ✓ (1)

3.5 F ✓ (1)

[6]

QUESTION 4 / *VRAAG 4*

4.1 The number of protons and neutrons in an atom. ✓✓

Die aantal protone en neutrone in 'n atoom. (2)

4.2 Atoms of the same element having the same number of protons, but different numbers of neutrons. ✓✓

Atome van dieselfde element wat dieselfde aantal protone, maar verskillende aantal neutrone, het. (2)

4.3.1 17 ✓ (1)

4.3.2 17 ✓ (1)

4.3.3 20 ✓ (1)

4.4 Ammonium dichromate / *Ammoniumdichromaat* ✓ (1)

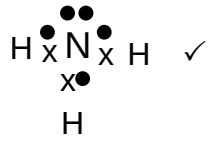
4.5 $PbC\ell_2$ ✓ (1)

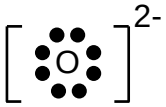
[9]

QUESTION 5 / *VRAAG 5*

5.1 The sharing of electrons between atoms to form molecules.✓✓

Die deel van elektrone tussen atome om molekule te vorm. (2)

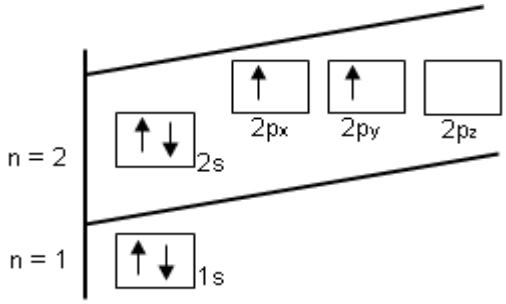
5.2.1  ✓ (1)

5.2.2  ✓ (1)

5.3 Pauli ✓ (1)

5.4 4 ✓ (1)

5.5



Criteria for Aufbau diagram / *Kriteria vir Aufbaudiagram*:	**Mark/Punt**
Drawn for two main energy levels. *Geteken vir eerste twee hoofenergievlakke.*	✓
First four electrons represented as pairs with opposite spin. *Eerste vier elektrone getoon as pare met teenoorgestelde spin.*	✓
Last two electrons represented as unpaired. *Laaste twee elektrone as ongepaard aangedui*.	✓

(3)

5.6.1 $1s^1$ ✓ (1)

5.6.2 CH_4 ✓ (1)

[11]

QUESTION 6 / *VRAAG 6*

6.1.1 A&C OR/*OF* any two of/*enige twee van* E, B & D ✓ (1)

6.1.2 AC or/*of* BD or/*of* EB ✓ (1)

6.2.1 0,75 m ✓ (1)

6.2.2 5 m ✓ (1)

6.3 The <u>number of waves per second</u> ✓✓

Die <u>aantal golwe per sekonde</u> (2)

6.4.1 $f = \frac{n}{\Delta t}$ ✓ $= \frac{2}{3}$ ✓ $= 0{,}67\ Hz$ ✓ OR/*OF* $f = \frac{1}{T}$ ✓ $= \frac{1}{1{,}5}$ ✓ $= 0{,}67\ Hz$ ✓ (3)

6.4.2 **POSITIVE MARKING FROM 6.4.1. / *POSITIEWE NASIEN VANAF 6.4.1.***

$T = \frac{1}{f}$ ✓ $= \frac{1}{0{,}67}$ ✓ $= 1{,}49\ s$ ✓ (1,50 s)

OR/*OF*

T = 1,5 s (✓✓)
It takes 3 s to complete two waves. ✓
Dit neem 3 s om twee golwe te voltooi. (3)
[12]

QUESTION 7 / *VRAAG 7*

7.1.1 $T = \frac{1}{f} = \frac{1}{200}$ ✓ $= 0{,}005\ s$ ✓ (2)

7.1.2 **POSITIVE MARKING FROM 7.1.1. / *POSITIEWE NASIEN VANAF 7.1.1.***

$v = \lambda f$ ✓
$320 = \lambda(200)$ ✓
$\lambda = 1{,}6\ m$ ✓

OR/*OF*

$\bar{v} = \frac{\Delta x}{\Delta t}$ ✓
$320 = \frac{\lambda}{0{,}005}$ ✓
$\lambda = 1{,}6\ m$ ✓ (3)

7.2

$\bar{v} = \frac{\Delta x}{\Delta t}$
✓ $340 = \frac{400}{\Delta t}$ ✓
$\Delta t = 1{,}18\ s$ ✓

OR/*OF*

$\bar{v} = \frac{\Delta x}{\Delta t}$
✓ $340 = \frac{200}{\Delta t}$ ✓
$\Delta t = 0{,}588\ s$
$\Delta t_t = 2x0{,}588$
$= 1{,}18\ s$ ✓ (3)
[8]

GRAND TOTAL / *GROOTTOTAAL*: 75