

## GAUTENG DEPARTMENT OF EDUCATION

## SENIOR CERTIFICATE EXAMINATION

FUNCTIONAL PHYSICAL SCIENCE SG  
(Second Paper: Chemistry)

## QUESTION 1

1.1	B	1.6	D	1.11	A	
1.2	A	1.7	B	1.12	B	
1.3	D	1.8	D	1.13	D	
1.4	D	1.9	C	1.14	B	
1.5	C	1.10	A	1.15	A	15x3=[45]

## QUESTION 2

2.1	Period 2 group VII	(4)
2.2	F	(2)
2.3	G	(2)
2.4	23	(2)
2.5	H	(2)
2.6	$1s^2 2s^2$	(2)
		[14]

## QUESTION 3

3.1.1	$\text{NH}_3$	(2)
3.1.2	$\text{CH}_4$	(2)
3.1.3	$\text{MgCl}_2$	(2)
3.1.4	C	(2)
3.2	$\text{H}^{\times} \overset{\circ\circ}{\underset{\circ\circ}{\text{O}}}_2 \text{H}^{\times}$	(4)
		[12]

**QUESTION 4**

- 4.1 CH<sub>4</sub>, He, CO<sub>2</sub>, CCl<sub>4</sub> (4)
- 4.2 H<sub>2</sub>O (2)
- 4.3 He (2)
- 4.4 H<sub>2</sub>O (2)
- 4.5 NaCl (2)
- [12]

**QUESTION 5**

- 5.1 C (2)
- 5.2 C (2)
- 5.3 C (2)
- 5.4 A and B (2)
- [8]

**QUESTION 6**

- 6.1 Temperature  
Concentration (2)
- 6.2 Increase temperature  
Decrease CO<sub>2</sub> concentration; decrease H<sub>2</sub> concentration (6)
- 6.3 Mol amounts of reactants and products are the same (2)
- 6.4 Exothermic (2)
- [12]

**QUESTION 7**

- 7.1 Pottasium. (2)
- 7.2.1  $\frac{\text{SO}_2}{+4} + \frac{\text{O}_2}{0} \rightarrow \frac{\text{S}}{+6}$  (3)
- 7.2.2 Yes, either the oxidation state of oxygen or sulphur changes (3)
- 7.2.3  $2\text{SO}_2 + \text{O}_2 \rightarrow 2\text{SO}_3$  (3)



- 7.2.4 O<sub>2</sub> (2)  
[13]

### QUESTION 8

- 8.1.1 0,5 Volt to 1,0 V (2)
- 8.1.2 Chemical → electrical (2)
- 8.1.3  $\text{Zn} \rightarrow \text{Zn}^{++} + 2 \text{e}^-$  (3)
- 8.1.4 Zinc (2)
- 8.1.5 The Zinc electrode (2)
- 8.1.6 Watch cell ("battery") torch cell, etc. (1)  
[12]

### QUESTION 9

- 9.1.1 Solid at room temperature  
Conducts electricity  
Has metallic lustre (3)
- 9.1.2 Beneath paraffin (2)
- 9.1.3  $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2 \text{NaOH} + \text{H}_2$  (the equation does not necessarily need to be balanced) (4)
- 9.1.4 Hydrogen gas (2)
- 9.2 Halogens (2)  
[13]

### QUESTION 10

- 10.1 It's a bond which consists only of hydrogen and carbon. (2)
- 10.2
- $$\begin{array}{cccc}
 \text{H} & \text{H} & \text{H} & \text{H} \\
 | & | & \backslash & \backslash \\
 \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\
 | & | & / & / \\
 \text{H} & \text{H} & \text{H} & \text{H}
 \end{array}$$

$$\begin{array}{ccc}
 \text{H} & \text{H} & \text{H} \\
 | & | & | \\
 \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\
 | & | & | \\
 \text{H} & \text{H} & \text{H}
 \end{array}$$
- (4)
- 10.3 Buthane (2)
- 10.4 Much heat is generated or used in welding. (1)  
[9]

**TOTAL: 150**

GAUTENGSE DEPARTEMENT VAN ONDERWYS

SENIORSERTIFIKAAT-EKSAMEN

FUNKSIONELE NATUUR- EN  
SKEIKUNDE SG  
(Tweede Vraestel: Chemie)

VRAAG 1

1.1	B	1.6	D	1.11	A	
1.2	A	1.7	B	1.12	B	
1.3	D	1.8	D	1.13	D	
1.4	D	1.9	C	1.14	B	
1.5	C	1.10	A	1.15	A	15x3=[45]

VRAAG 2

2.1	Periode 2 groep VII	(4)
2.2	F	(2)
2.3	G	(2)
2.4	23	(2)
2.5	H	(2)
2.6	$1s^2 2s^2$	(2)
		[14]

VRAAG 3

3.1.1	$\text{NH}_3$	(2)
3.1.2	$\text{CH}_4$	(2)
3.1.3	$\text{MgCl}_2$	(2)
3.1.4	C	(2)
3.2	$\text{H}^x \overset{\infty}{\underset{\infty}{\text{O}}}_x \text{H}$	(4)
		[12]



**VRAAG 4**

- 4.1 CH<sub>4</sub>, He, CO<sub>2</sub>, CCl<sub>4</sub> (4)
- 4.2 H<sub>2</sub>O (2)
- 4.3 He (2)
- 4.4 H<sub>2</sub>O (2)
- 4.5 NaCl (2)  
[12]

**VRAAG 5**

- 5.1 C (2)
- 5.2 C (2)
- 5.3 C (2)
- 5.4 A en B (2)  
[8]

**VRAAG 6**

- 6.1 Temperatuur  
Konsentrasie (2)
- 6.2 Verhoog temperatuur  
Verlaag CO<sub>2</sub> konsentrasie; verlaag H<sub>2</sub> konsentrasie (6)
- 6.3 Molhoeveelheid reagense en produkte is dieselfde (2)
- 6.4 Eksotermies (2)  
[12]

**VRAAG 7**

- 7.1 Kalium (2)
- 7.2.1  $\frac{\text{SO}_2}{+4} + \frac{\text{O}_2}{0} \rightarrow \frac{\text{S}}{+6}$  (4)
- 7.2.2 Ja, die oksidasietoestand van suurstof of swael verander. (3)
- 7.2.3  $2\text{SO}_2 + \text{O}_2 \rightarrow 2\text{SO}_3$  (3)

- 7.2.4 O<sub>2</sub> (2)  
[13]

### VRAAG 8

- 8.1.1 0,5 Volt tot 1,0 V (2)
- 8.1.2 Chemies → elektries (2)
- 8.1.3  $\text{Zn} \rightarrow \text{Zn}^{++} + 2 \text{e}^-$  (3)
- 8.1.4 sink (2)
- 8.1.5 Die sinkelektrode. (2)
- 8.1.6 Horlosie sel, flitsel. (1)  
[12]

### VRAAG 9

- 9.1.1 Vastestof by kamertemperatuur.  
Gelei elektrisiteit.  
Het 'n metaalglans (3)
- 9.1.2 Onder parafien (2)
- 9.1.3  $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2 \text{NaOH} + \text{H}_2 \rightarrow$  (Hoef nie gebalanseer te wees nie.) (4)
- 9.1.4 Waterstofgas (2)
- 9.2 Halogene (2)  
[13]

### VRAAG 10

- 10.1 'n Verbinding wat net uit waterstof en koolstof bestaan. (2)
- 10.2
- $$\begin{array}{cccc}
 \text{H} & \text{H} & \text{H} & \text{H} \\
 | & | & \backslash & \backslash \\
 \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\
 | & | & / & / \\
 \text{H} & \text{H} & \text{H} & \text{H}
 \end{array}$$

$$\begin{array}{ccc}
 \text{H} & \text{H} & \text{H} \\
 | & | & | \\
 \text{H}-\text{C} & -\text{C} & -\text{C}-\text{H} \\
 | & | & | \\
 \text{H} & \text{H} & \text{H}
 \end{array}$$
- (4)
- 10.3 Butaan (2)
- 10.4 Baie hitte word afgegee of dit word vir sweiswerk gebruik. (1)  
[9]

**TOTAAL: 150**