

GAUTENG DEPARTMENT OF EDUCATION

SENIOR CERTIFICATE EXAMINATION

FUNCTIONAL PHYSICAL SCIENCE SG
(Second Paper: Chemistry)

QUESTION 1

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

QUESTION 2

2.1	2	(2)
2.2	-2	(2)
2.3	2 half filled orbitals	(2)
2.4	$A + 2e^- \rightarrow A^{-2}$	(3)
		[9]

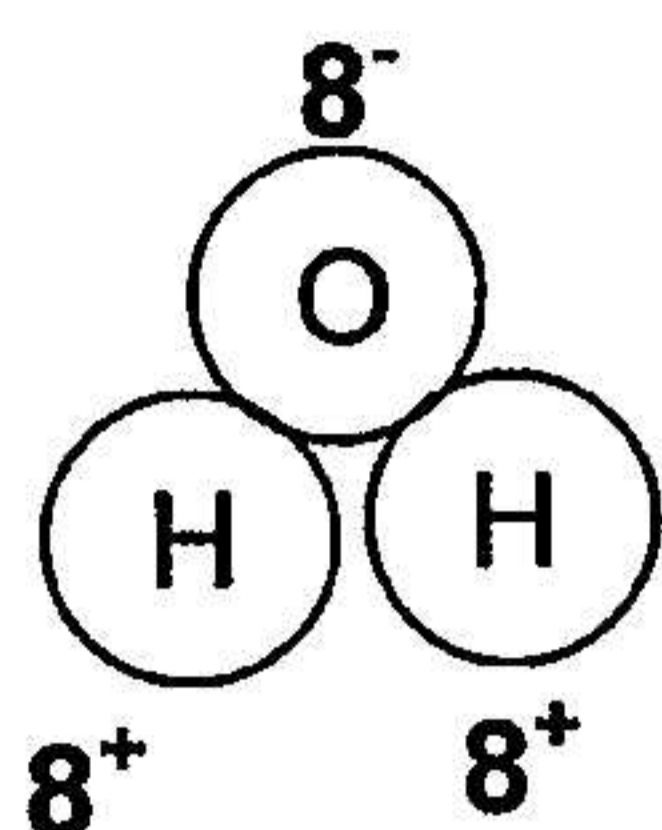
QUESTION 3

3.1	Covalent bond	(2)
3.2	HCl	(2)
3.3	Polar covalent	(2)
3.4	H – 2,1 Cl – <u>3,0</u> <u>0,9</u> 19% ionic	(4)
		[10]

QUESTION 4

4.1 Van der Waals forces will increase as the number of electrons increases. An increase in these forces will need more energy to divide molecules. The boiling points of these elements will increase from the top to the bottom of the group. (4)

4.2



Atom in molecule (1)
Shape of molecule (2)
Charge of molecule (2)

(4)

4.3

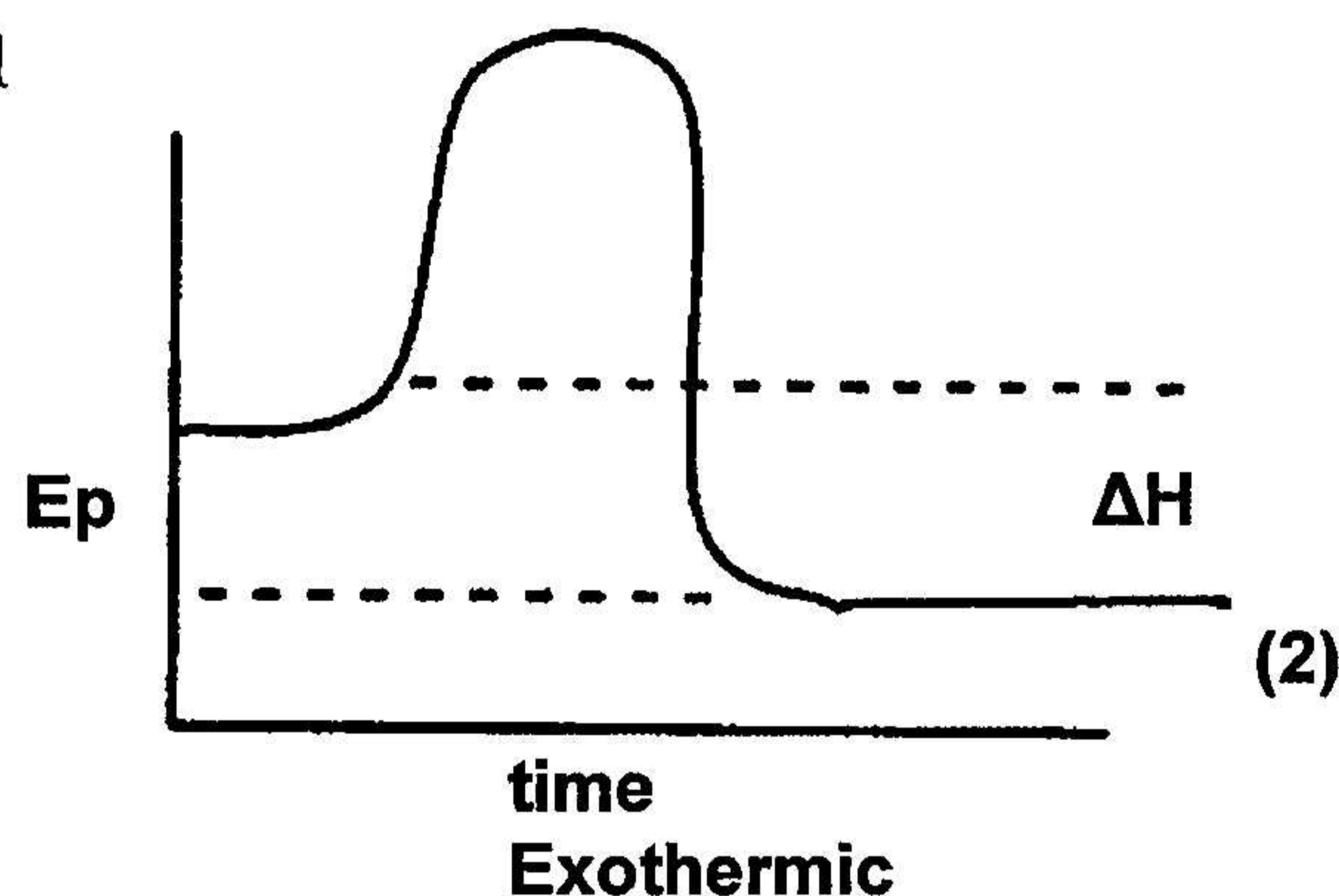
Hydrogen bond.

(2)

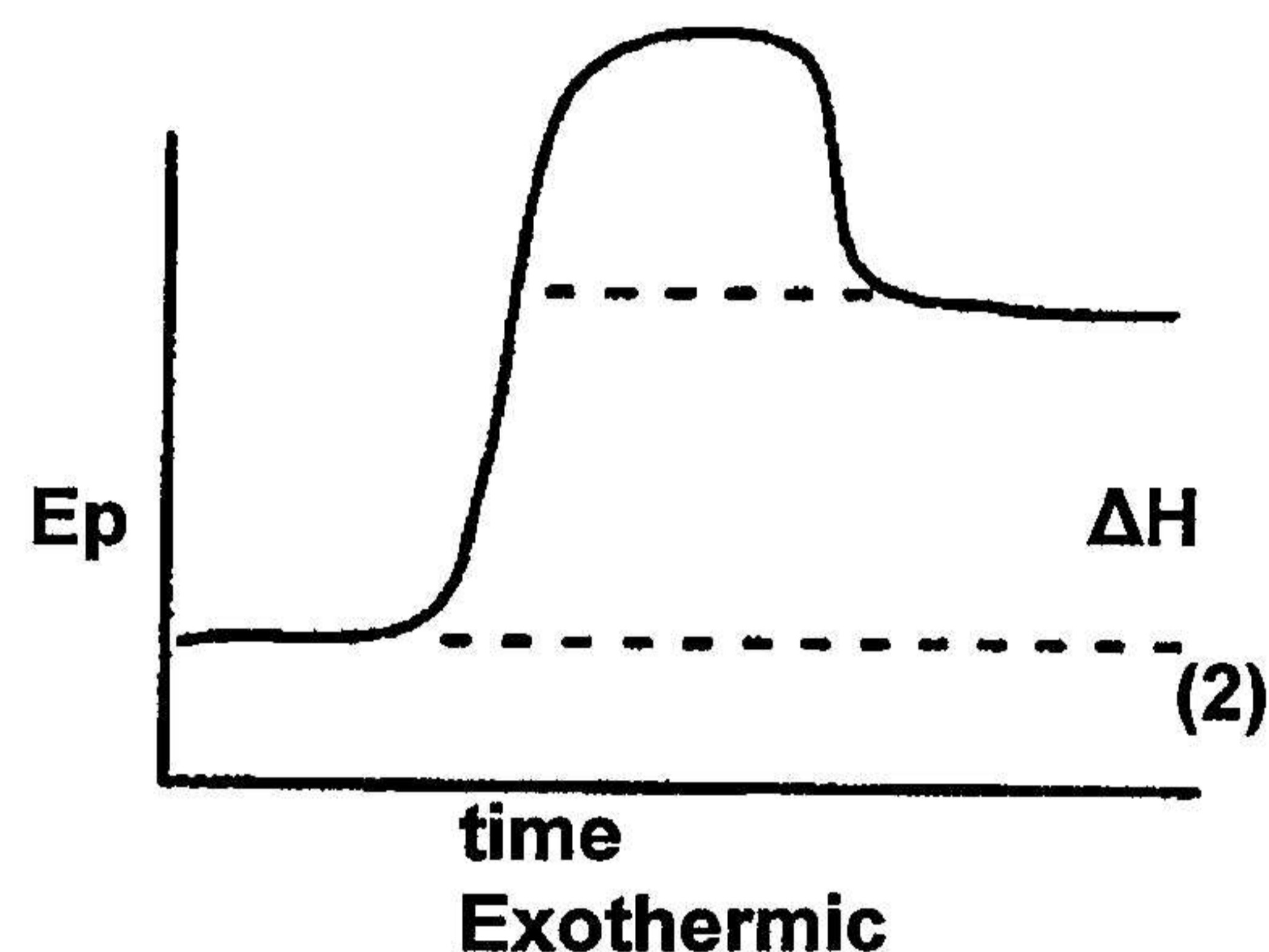
[10]

QUESTION 5

5.1



(2)



(2)

5.2

Endothermic, energy will be extracted out of the atmosphere. Chemical bonds are broken.

(3)

[7]

QUESTION 6

6.1

Catalyst

(2)

6.2

SO₃-gas

(2)

6.3.1

Equilibrium is disturbed, reverse reaction is favoured, equilibrium shifts towards left.

(3)

6.3.2

Reverse reaction is benefited. Increase in temperature will increase the rate of the reverse and forward reactions.

(2)

6.4

Less SO₃ will form.

(2)

6.5

To ensure the efficient production of products.

(2)

[13]

QUESTION 10

10.1 Ethanoic acid (2)

10.2
$$\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H}-\text{C}-\text{C}-\text{OH} \\ | \quad | \\ \text{H} \quad \text{H} \end{array}$$
 (2)

10.3 Alcohols (2)

10.4 Propene (2)

10.5 Alkenes (2)

[10]

TOTAL: 150

GAUTENGSE DEPARTEMENT VAN ONDERWYS

SENIORSERTIFIKAAT-EKSAMEN

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

VRAAG 1

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

VRAAG 2

2.1	2		(2)
2.2	-2		(2)
2.3	2 halfgevolle orbitale		(2)
2.4	$A + 2e^- \rightarrow A^{-2}$		(3)
			[9]

VRAAG 3

3.1	Kovalente binding		(2)
3.2	HCl		(2)
3.3	Polêr kovalent		(2)
3.4	H - 2,1		
	Cl - <u>3,0</u>		
	<u>0,9</u> 19% ionies		(4)
			[10]

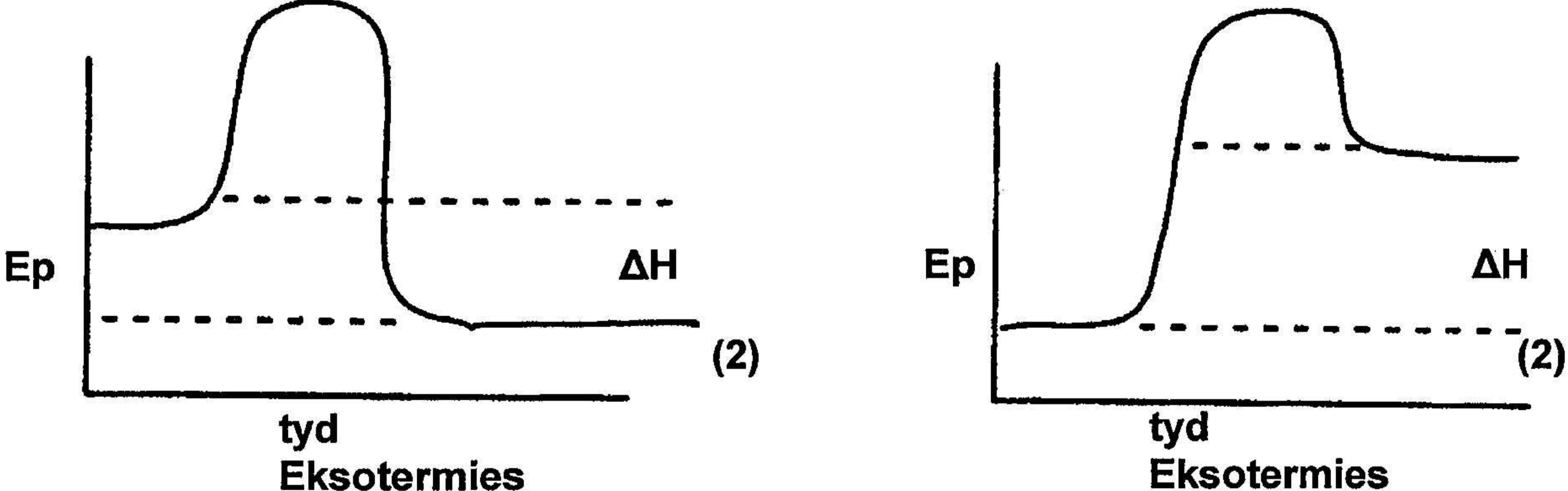
VRAAG 4

4.1 Van der Waalskragte sal toeneem soos die aantal elektrone toeneem. 'n Toename in hierdie kragte vereis meer energie om molekules te skei. Die kookpunte van die elemente neem toe van bo na onder in die groep. (4)

4.2  (4)

4.3 Waterstofbinding (2)
[10]

VRAAG 5

5.1  (2)

tyd
Eksotermies

5.2 Endotermies, energie word uit die atmosfeer geabsorbeer. Chemiese bindings word verbreek. (3)
[7]

VRAAG 6

6.1 Katalisator (2)

6.2 SO₃-gas (2)

6.3.1 Ewewig versteur, terugwaartse reaksie word bevoordeel, ewewig verskuif na links. (3)

6.3.2 Terugwaartse reaksie word bevoordeel. Verhoging in temperatuur verhoog die tempo van die voorwaartse sowel as terugwaartse reaksies. (2)

6.4 Minder SO₃ sal vorm. (2)

6.5 Om effektiewe produksie van produkte te verseker. (2)
[13]

VRAAG 10

10.1 Etanoësuur (2)

10.2
$$\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H}-\text{C}-\text{C}-\text{OH} \\ | \quad | \\ \text{H} \quad \text{H} \end{array}$$
 (2)

10.3 Alkohole (2)

10.4 Propeen (2)

10.5 Alkene (2)
[10]

TOTAAL: 150