

**Term 2 Assessment Task 3 2006 Theory**  
**Section A: Multiple Choice (1 mark each)**

Select the alternative A, B, C or D that best answers the question. Fill in the response oval completely.

**Sample:**  $2 + 4 =$  (A) 2 (B) 6 (C) 8 (D) 9  
A  B  C  D

If you think you have made a mistake, put a cross through the incorrect answer and fill in the new answer.

A  B  C  D

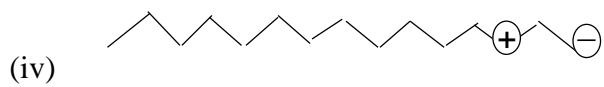
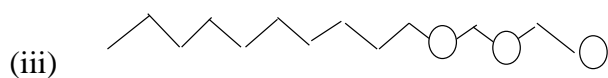
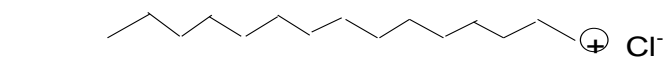
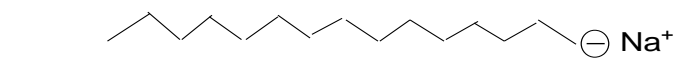
If you change your mind and have crossed out what you consider to be the correct answer, then indicate the correct answer by writing the word **correct** and drawing an arrow as follows.

A  B  C  D   
An arrow labeled "correct" points to the B option.

**Indicate your answer on the answer grid on page 3**

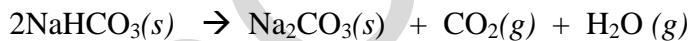
- Fatty acids containing which range of number of carbon atoms are commonly used for soap-making?  
(A) from  $C_6 - C_{10}$   
(B) from  $C_{10} - C_{20}$   
(C) from  $C_{20} - C_{30}$   
(D) from  $C_{30} - C_{40}$
- The production of sulfuric acid requires the oxidation of sulfur. What is the change in oxidation number of sulfur in sulfur dioxide compared to that in sulfuric acid?  
(A) 2 to 4  
(B) 4 to 6  
(C) 2 to 6  
(D) 4 to 8

3. Identify the diagrammatic representation of the shapes and electrical charges of corresponding surfactant molecules



	<i>Anionic</i>	<i>Cationic</i>	<i>Non-ionic</i>
(A)	(i)	(ii)	(iii)
(B)	(ii)	(i)	(iii)
(C)	(iv)	(ii)	(iii)
(D)	(v)	(i)	(iii)

4. 1.0 kg. of sodium hydrogen carbonate was heated and a complete reaction occurred



What volume of carbon dioxide gas would be produced at 100 kPa and 25°C?

- (A) 11.9 L  
 (B) 147.5 L  
 (C) 295 L  
 (D) 590.2 L

**Section A**

**Student Number**.....

**Multiple Choice      Answer Grid**

1.	A O	B O	C O	D O
2.	A O	B O	C O	D O
3.	A O	B O	C O	D O
4.	A O	B O	C O	D O

**Section B: Short Answer Questions**

**Question 5 (6 marks)**

**MARKS**

Sulfuric acid is often described as the world's most important industrial chemical because of the great variety and importance of the uses to which it is put.

- (a) Identify one important substance which requires sulfuric acid for its production. **1**

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- (b) Using equations, only, outline the three main steps in the contact process. **3**

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*Question 5 continues next page..*

- (c) Describe the result for a dehydration experiment using concentrated sulfuric acid and the safe work practices that were employed. 2

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**Question 6 (4 marks)**

The Solvay process has been in use since the 1860's.

- (a) What is the Solvay process used to manufacture? 1

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- (b) Identify one use for this substance? 1

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- (c) During the Solvay process ammonia is used and converted to ammonium chloride.

- (i) Name the substance that is mixed with ammonium chloride in order to recover the ammonia? 1

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- (ii) Write a balanced chemical equation to show the recovery of ammonia. 1

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**Question 7 (6 marks)**

Two of the three electrolysis methods used to produce sodium hydroxide are the *diaphragm process* and the *mercury process*. Distinguish between the two processes by describing the reactions involved and comparing the purity of the product(s) in each process.

**6**

*Test continues next page*

**Question 8 (4 marks)**

Imagine you are an organic chemist and you are to design a new laundry detergent for washing oily and soiled clothes . Describe the structure of the detergent molecule you will synthesise and explain how it works.

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