Subject: Chemistry

Topic: Detergents

Level: S5

Background information:
A definition of detergents, the historical development of detergents, the classification of detergents, the wetting ability and emulsifying action of detergents.

Learning objectives:
Emulsifying properties of detergents in terms of their structures
1. Content
i. Task 1 Activating prior knowledge by completing the glossary
ii. Task 2 Visualizing the structure of detergents by colouring the diagrams
iii. Task 3 Rearranging the cleaning diagrams
iv. Task 4 Explaining the cleaning actions
v. Task 5 Information Transfer: producing a PowerPoint to explain the emulsifying properties of detergents to Form One students who are interested in detergent science

S5 Chemistry

Detergents

Worksheet 1

NAME : _____ Class:_____ No:_____ Date:_____

Task 1

Activating prior knowledge by completing the glossary

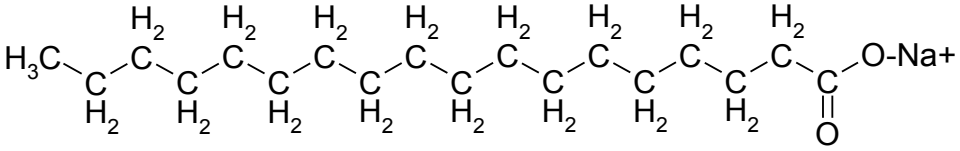
Use a dictionary to find the meaning the following terms and an example of their use.
You can use the following website:
Chemistry glossary http://development.shodor.org/UNChem/glossary.html
Marriam-Webster online dictionary http://www.m-w.com
Ask Jeeves http://www.ask.com

Words	Meaning and example if any
Hydrophilic	
Hydrophobic	
Soaps	
Soapless detergents	
Anionic head	
Carbonxylate group	
Emulsion	
Emulsifying agent	
Stable emulsion	
Unstable emulsion	

Task 2

Visualizing the structure of detergents by colouring the diagrams

The soap have the formula: $CH_3(CH_2)_{16}COO^-Na^+$. It consists of two parts: an ionic head and a hydrocarbon tail.



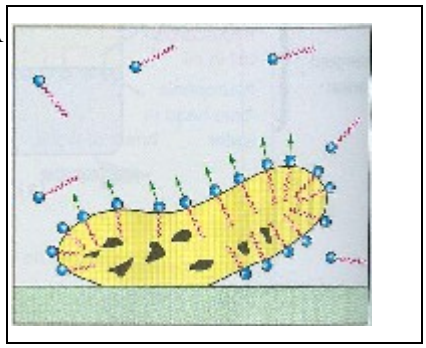
Use BLUE to colour the ionic head and RED to colour the hydrocarbon tail.

Task 3

Rearrange the cleaning diagrams

The following diagrams about the emulsifying properties of detergent are not in the correct order. Study the diagrams and discuss with your classmates what the correct sequence should be.

A



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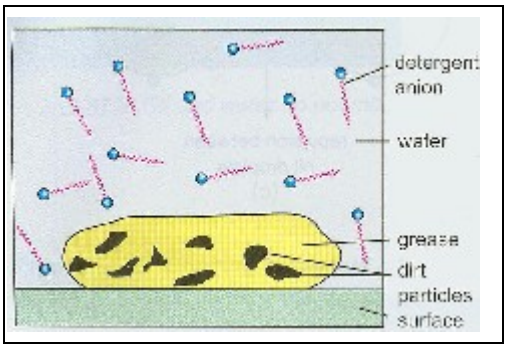

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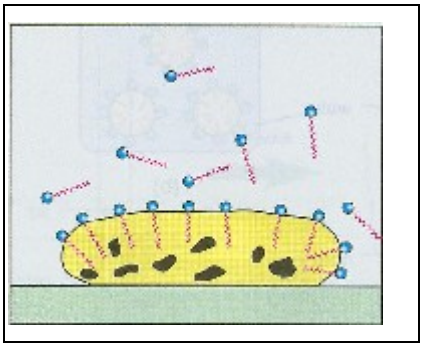

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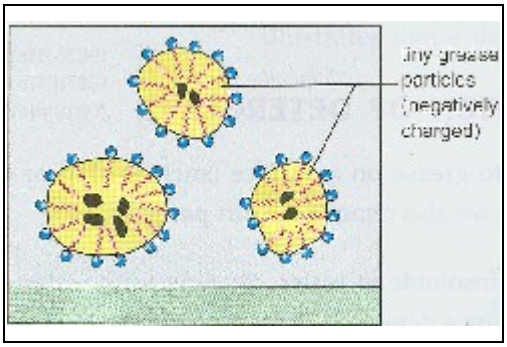

The correct sequence is _____, _____, _____ and _____.

Task 4

Explaining cleaning actions

 Writing

Now write a short paragraph to describe how the detergent performs the emulsifying properties. The following questions may help you.

What is the structure of a detergent?
Which part goes into the grease and which part dissolves in water?
What happens to the grease?
How do the oil droplets form?
Do they join together? Why?

Use apprpriate sequence connectives in your paragraph.

First, _____
_____
_____
_____
Second,_____
_____
_____
_____
Third_____
_____
_____
_____
Fourth,_____
_____
_____
_____
Finally,_____
_____
_____
_____

Task 5

Explaining how detergents work to young science students:

Imagine you are the science society chairman. You are producing a PowerPoint to explain the emulsifying properties of detergents to Form One students who are interested in detergent science in a Science Week.

Do not use more than ten slides. The Form One students are eager to ask questions. You may use the following to design your PowerPoint.

Slide ONE: Title: _____
Slide TWO: The process I am going to explain is _____
Slide THREE: In the first stage, the _____
Slide FOUR: Next the _____
Slide FIVE: This is followed by _____
Slide SIX: Finally _____

References:

Parkinson, John. (2002). *Reflective Teaching of Science 11-18, Continuum Studies in Reflective Practice and Theory*. Continuum, London.

Wellington, J.J. (2000). *Teaching and learning secondary science : contemporary issues and practical approaches*. Routledge, London, New York.