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For Supervisor's use only

90730



### Level 3 Science, 2009

# 90730 Describe selected organic compounds and their uses

Credits: Four 9.30 am Monday 30 November 2009

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–10 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

For Assessor's use only	Achievement Criteria	
Achievement	Achievement with Merit	Achievement with Excellence
Describe selected organic compounds and their uses.	Explain selected organic compounds and their uses.	Discuss selected organic compounds and their uses.
Ov	rerall Level of Performance	

You are advised to spend 45 minutes answering the questions in this booklet.

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#### PINEAPPLE LUMPS

**QUESTION ONE: ESTERS** 

Pineapple lumps are a popular confectionery item that has a soft pineapple-flavoured centre, coated in chocolate. An ester gives the pineapple flavour.

The formula below shows the pineapple ester.

Discuss the process of formation for the ester above (esterification) from ethanol and butanoic acid in a laboratory.

Include the following:

- name of ester and symbol/word equation
- how the odour changes during the reaction process

•	details and justification for the conditions required for maximum yield of the ester.

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#### **QUESTION TWO: FATS AND OILS**

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The chocolate coating of pineapple lumps includes cocoa powder and vegetable oil.(a) Describe the structure of fats and oils.

A labelled diagram may assist your answer.			

(b) Discuss the **chemical** reasons for the different effects of oils and fats on human health.

Include in your answer:

- effects of excess fats or oils
- degree of saturation
- cis and trans structures.

A labelled diagram may assist your answer.


#### **QUESTION THREE: CHOCOLATE**

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The chocolate coating contains a lipid that has C=C bonds. The chocolate coating goes soft when held.

Discuss why the chocolate goes soft with reference to:

- degree of saturation
- melting point
- shape of molecule.

A labelled diagram may assist your answer.			

#### **QUESTION FOUR: SOAPS**

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A shirt has a chocolate stain. Describe the structure of soap molecules. (a) Include a labelled diagram in your answer. Discuss how soap acts to remove the chocolate from the shirt. (b) In your answer, refer to: polarity of molecule micelle formation. A labelled diagram may assist your answer.

## Extra paper for continuation of answers if required. Clearly number the question.

Question number	