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Exam Practice Guide

Unit 3
Chemistry
Examination Questions

Key Features:

- ✓ 80 original examination style questions on all examinable topics.
- ✓ Full solutions and a marking guide to all questions.
- ✓ Separated into key topic areas within each Area of Study, enabling students to master one topic at a time.
- ✓ Written by VCE assessors who mark the real examinations.
- ✓ Excellent resource for examination practice.

Helping VCE students be the best they can be.

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AREA OF STUDY 1: What are the options for energy production?

Topic 1 – Obtaining energy from fuels

Question 1
"Fossil fuels" refers to:
A. coal
B. oil
C. natural gas
D. All of the above

Question 2
Photosynthesis can be represented by the equation:
$6CO_2(g) + 6H_2O(l) \rightarrow C_6H_{12}O_6(s) + 6O_2(g)$ $\Delta H = +2803\ kJ\ mol^{-1}$

The energy change when 360 g of glucose is burnt will be:
A. the absorption of 2803 kJ of energy.
B. the release of 5606 kJ of energy.
C. the absorption of 5606 kJ of energy.
D. the release of 5606 J of energy.

Question 3
The equation for the combustion of hydrogen is:
$2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$ $\Delta H = -484\ kJ\ mol^{-1}$

The energy released when 2.40 g of hydrogen reacts is:
A. 145 J
B. 290 J
C. 145 kJ
D. 290 kJ

Question 4
Respiration is a highly exothermic reaction occurring in body cells.
$C_6H_{12}O_6(aq) + 6O_2(g) \rightarrow 6CO_2(g) + 6H_2O(g)$ $\Delta H = -2803\ kJ\ mol^{-1}$

The basal metabolic rate (BMR) for an average adult is 4301 kJ/day. Using this number what is the minimum mass of glucose required per day to provide the basic energy requirements for our bodies.
A. 46 g
B. 117 g
C. 276 g
D. 1656 g

Question 5
The equation for the combustion of hydrogen is:
$2H_2(g) + O_2(g) \rightarrow 2H_2O(g) \quad \Delta H = -484 \text{ kJ mol}^{-1}$

The value of ΔH provided here:
A. should be the same as that given in the VCAA chemistry data book
B. will be double that of the data book
C. will be half that of the data book
D. will be different to that of the data book, as the phases of the chemicals are different

Question 6
The fuel that produces the greatest amount of energy per gram during combustion is:
A. ethanol
B. propane
C. octane
D. hydrogen

Question 7
Given the following two equations:
$2H_2 + O_2 \rightarrow 2H_2O; \quad \Delta H = -572 \text{ kJmol}^{-1}$
$H_2 + O_2 \rightarrow H_2O_2; \quad \Delta H = -188 \text{ kJmol}^{-1}$

What is the ΔH for the following reaction:
$2H_2O_2 \rightarrow 2H_2O + O_2$

A. – 384 kJmol^{-1}
B. – 196 kJmol^{-1}
C. – 948 kJmol^{-1}
D. + 376 kJmol^{-1}

Question 8
a. Octane (C_8H_{18}) is a fossil fuel derived from the fractional distillation of crude oil. Octane is a component of petrol and is combusted in car engines. Write the combustion reaction for octane.

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(2 marks)