

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**TWENTY FIRST CENTURY SCIENCE**  
**ADDITIONAL APPLIED SCIENCE A**  
Life Care (Higher Tier)  
**WEDNESDAY 23 JANUARY 2008**

Afternoon  
Time: 45 minutes

Candidates answer on the question paper  
**Additional materials (enclosed):** None

Calculators may be used  
**Additional materials (required):**  
Pencil  
Ruler (cm/mm)



Candidate Forename

Candidate Surname

Centre Number

Candidate Number

**INSTRUCTIONS TO CANDIDATES**

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Do **not** write outside the box bordering each page.
- Write your answer to each question in the space provided.

**INFORMATION FOR CANDIDATES**

- The number of marks for each question is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **36**.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	13	
2	8	
3	9	
4	4	
5	2	
<b>TOTAL</b>	<b>36</b>	

This document consists of **12** printed pages.

Answer **all** the questions.

**1** Gemma injures her shoulder while playing rugby.  
She is taken to the Accident and Emergency Unit at the hospital.

**(a)** A nurse asks Gemma some questions.  
Suggest why the nurse needs to ask questions.

.....  
.....[1]

**(b)** Gemma is kept waiting while other people are rushed in before her.  
Suggest why other people are treated before Gemma.

.....  
.....[1]

**(c)** The doctor uses a non-invasive technique to look inside Gemma's shoulder.

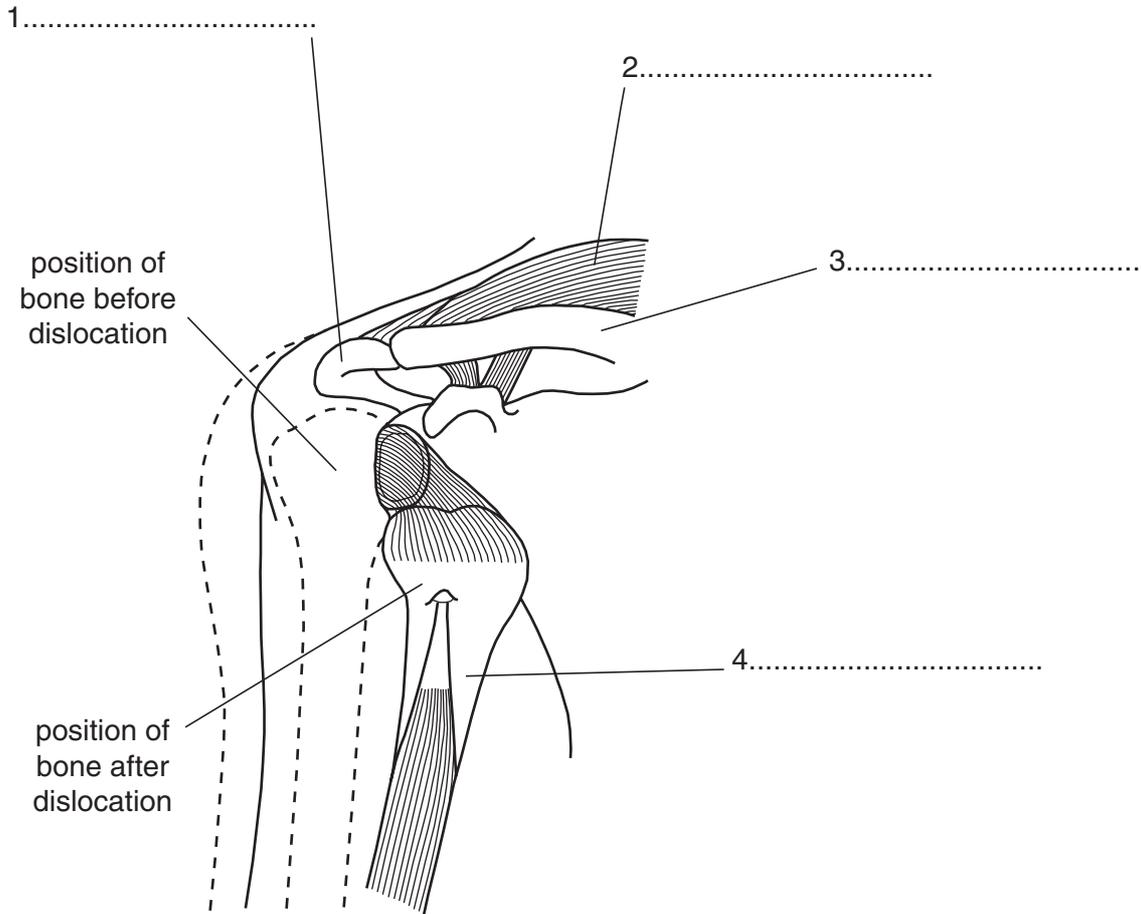
**(i)** Name a non-invasive technique the doctor could use.

.....[1]

**(ii)** Explain why non-invasive techniques are used whenever possible.

.....  
.....  
.....[2]

(d) The diagram shows what has happened to her shoulder.  
The bones in Gemma's shoulder joint have been forced apart (dislocated).



Label the diagram. Choose words from this list.

- clavicle
- femur
- fibula
- humerus
- muscle
- rib
- scapula
- skull
- sternum

[4]

(e) The doctor puts Gemma's joint back into position and refers her to a physiotherapist.

(i) What is the role of a physiotherapist?

.....  
.....  
.....[1]

(ii) Gemma needs to strengthen her shoulder muscles.  
Describe a set of exercises Gemma could carry out to strengthen her muscles.

.....  
.....  
.....  
.....[3]

[Total: 13]

- 2 Carly has just given birth.  
The midwife checks the baby to see if it is healthy.



- (a) He records the heartbeat of the baby. A newborn baby should have a heartbeat of about 140 beats/min.

Here are four statements about the heartbeat of the baby.

- A the baby's heartbeat is 60 to 80 beats/min
- B the heartbeat is not regular (there is no rhythm)
- C there is a strong heartbeat of 160 beats/min
- D the heartbeat is a steady 130 beats/min but feels weak

- (i) Select the statement, **A, B, C** or **D**, which would cause the midwife the **most** concern. Give a reason for your choice.

statement .....

reason .....

.....

.....[2]

The midwife carries out further tests.

- (ii) Suggest **two** other tests he should carry out.

1 .....

2 .....

[2]

(b) Newly born babies cannot control their body temperature.

(i) The baby's body temperature can drop too low.  
What is this condition called?

Put a **ring** around the correct answer.

**hypertension**

**hypotension**

**hyperthermia**

**hysteria**

**hypothermia**

[1]

(ii) Suggest why a low body temperature might result in death.

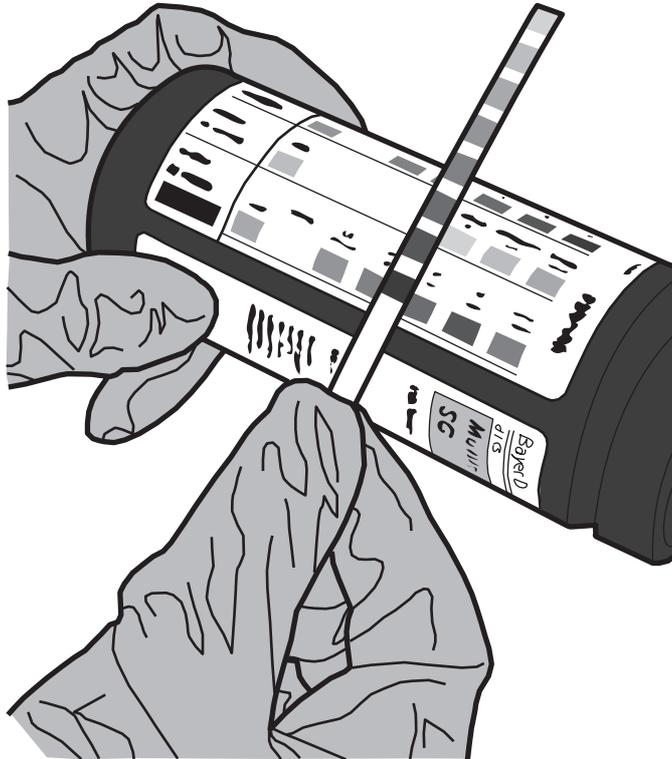
.....  
.....[1]

(iii) When the baby is older it will be more able to control its body temperature.  
Describe and explain **one** process that will happen in the baby's body to keep it warm.

.....  
.....  
.....[2]

[Total: 8]

- 3 Martina moves house. She registers with a new doctor. She goes to the surgery for a medical. The nurse tests Martina's urine with a test stick.



- (a) Martina's urine gives a positive test for glucose because she is diabetic. Urine samples can be tested for a number of other different conditions. Write about **two other** conditions which can be detected by testing urine samples.

condition 1 .....

.....

.....

condition 2 .....

.....

.....

[4]

(b) Martina also has high blood pressure.  
Her new doctor prescribes her some medicine.

(i) Explain why it is important that the doctor is aware of her diabetes **before** prescribing her blood pressure medicines.

.....  
.....  
.....[1]

(ii) The doctor tells Martina that the medicine will treat the symptoms but will not be a cure. Explain what the doctor means.

.....  
.....  
.....  
.....[2]

(iii) The doctor tells Martina that the medicine may cause some side effects. Suggest why the doctor still gives her the medicine, despite the possible side effects.

.....  
.....  
.....[2]

[Total: 9]

4 Stefan reads this newspaper article.

## Sugary breakfast foods slows children's brains

Children who miss proper breakfasts or who eat sugary snacks may end up with slower reaction times.

Foods containing complex carbohydrates break down slowly providing energy throughout the morning.

Sugary snacks contain simple sugars which are used up very quickly and children are then more likely to lose concentration and be tempted to eat more sugary snacks.

Researchers have shown that two hours after eating a sugary snack, the children have a similar reaction time to a 70 year old.

Stefan is worried because he always misses breakfast.

He decides to try breakfast.

The table compares two kinds of breakfast food.

food (per 100 grams)	energy value (kilojoules)	protein (grams)	fat (grams)	carbohydrate
porridge	1500	12	7.1	70 g of which 1 g is sugar
sugar-coated cereal	1700	6	5	82 g of which 51 g is sugar

(a) (i) Calculate how much energy Stefan would get from a 30g serving of each type of breakfast food.

Show how you work out your answer.

energy in porridge ..... kJ

energy in sugar-coated cereal ..... kJ

[1]

(ii) Calculate the difference in the amount of sugar Stefan would eat if he had the sugar-coated cereal (30 g) instead of the porridge (30 g).

[1]

(b) Stefan is advised to eat porridge rather than sugar-coated cereal. Explain why.

.....

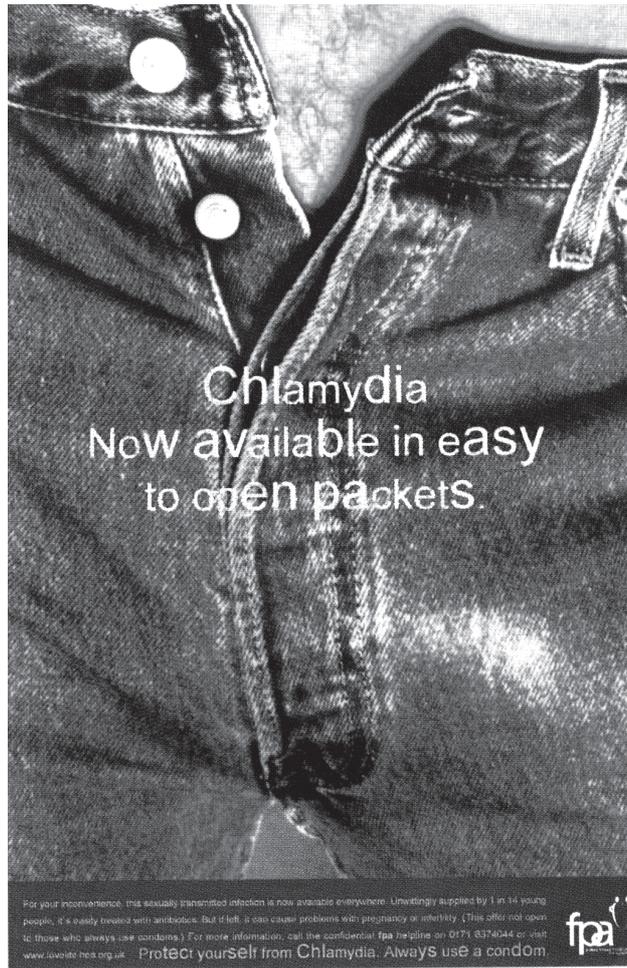
.....

.....

.....[2]

[Total: 4]

- 5 Look at this poster produced by The Health Protection Agency. It tries to educate people about Chlamydia, the most common sexually transmitted infection in the country.



© fpa

Explain why, despite the expense of such health education, it is so important to educate people about public health problems.

.....

.....

.....

.....[2]

[Total: 2]

**END OF QUESTION PAPER**

---

*Copyright Acknowledgements:*

Q.5 image                      © fpa, [www.fpa.org.uk](http://www.fpa.org.uk). Reproduced by permission of fpa.

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (OCR) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

OCR is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

© OCR 2008