

Candidate Name	Centre Number	Candidate Number
		0



GCSE

682/01

ADDITIONAL APPLIED SCIENCE

Unit 2: Science at Work in Applied

Contexts

FOUNDATION TIER

P.M. WEDNESDAY, 21 May 2008

45 minutes



For Examiner's use only	
Section A	
Section B	
Total	

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly presentation in your answers.

You are reminded to show all your working. Credit is given for correct working even when the final answer given is incorrect.

SECTION A (36 marks)

Answer **all** the questions in the spaces provided.

1. There are many different types of materials used to make sportswear, including **polyester, cotton, lycra, leather** and **nylon**.

(a) (i) From the list, choose **one** natural material used to make sportswear. [1]

.....

(ii) From the list, choose **one** synthetic material used to make sportswear. [1]

.....

(b) Give **one** advantage of using synthetic materials to make sportswear. [1]

.....

.....

2. Food poisoning is caused by bacteria.

(i) Give **two** symptoms of food poisoning. [2]

1.

2.

(ii) State **two** methods of keeping food free from bacteria when it is being prepared. [2]

1.

2.

3. The human body needs a supply of vitamins.
Not enough vitamins in the diet can lead to a vitamin deficiency.
If this happens over a period of time your health will suffer.

Join with a line each **vitamin deficiency** to the **two symptoms** it would produce.

[4]

Vitamin deficiency**Symptom**

lack of
Vitamin C

constipation

weak bones

poor healing of
cuts and wounds

lack of
Vitamin D

weak teeth

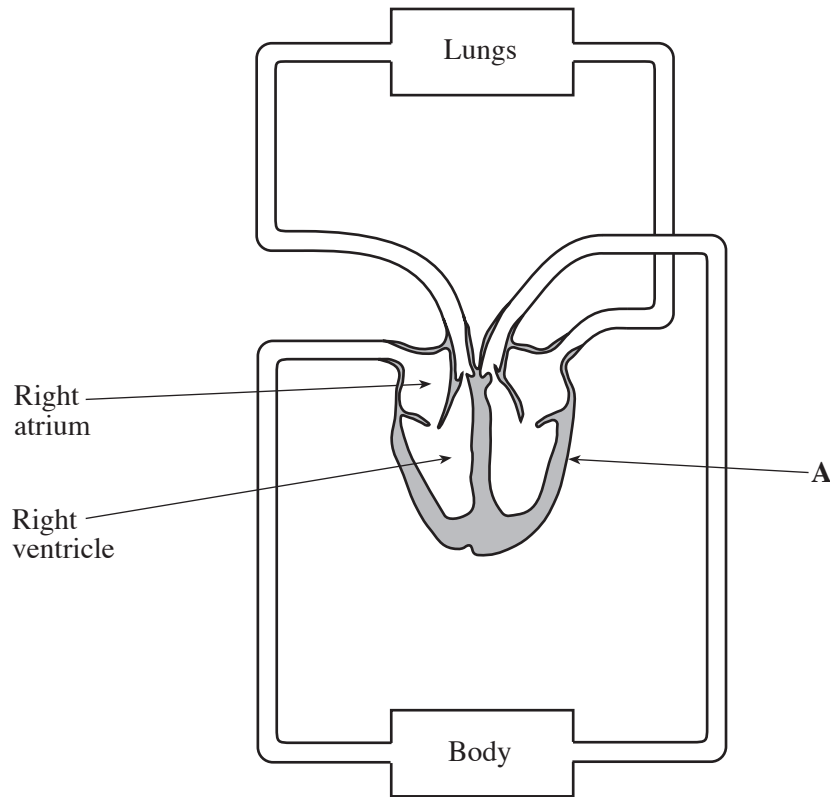
bleeding gums

4. The table shows information about two tennis rackets.

	Racket A	Racket B
material	graphite composite	wood
mass (g)	346	520
head size (cm²)	600	450
length (cm)	68	75

- (i) Give **one** reason why a player using racket A would find it easier to hit the ball. [1]
.....
- (ii) Give **one** reason why a player using racket B would get tired arms more quickly. [1]
.....
- (iii) Give **one** reason why a player using racket B could reach balls further away from her. [1]
.....

5. The diagram shows the human cardiovascular system.



(a) **Name** the organ labelled A. [1]

(b) Blood leaves the right ventricle. It travels through different parts of the body until it returns to the right atrium. Put the words in the box into the correct spaces in the sentence below. [3]

left ventricle lungs left atrium rest of the body

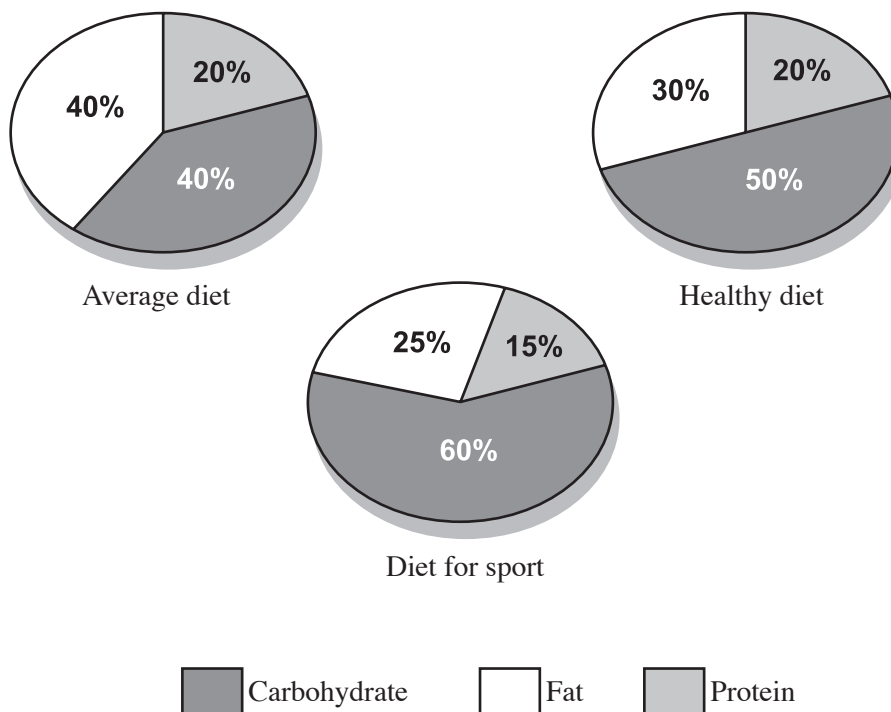
The blood flows from the right ventricle to the to the to the to the and then to the right atrium.

(c) **Underline** the word in the brackets that correctly completes each of the following sentences. [3]

- (i) During exercise the heart rate (increases / decreases / stays the same).
- (ii) During exercise the breathing rate (increases / decreases / stays the same).
- (iii) During exercise the body temperature (increases / decreases / stays the same).

A7

6. (a) Diets consist of different amounts of proteins, fats and carbohydrates.



- (i) Give **one** reason why the average diet is unhealthy. [1]
-
- (ii) What is the amount of carbohydrates in the healthy diet? [1]
-
- (iii) Give **two** differences between the average diet and the diet for sport. [2]
1.
2.

- (b) Some information from a cereal packet is shown in the following table.

Nutritional information	
protein	2.5 g
carbohydrate	16 g
fat	0.5 g
Values per 25 g	

The cereal can be served with different types of milk.
The table below shows some nutritional information about these types of milk.

type of milk	protein (g)	carbohydrates (g)	fat (g)
skimmed	4.4	6.2	0.3
semi-skimmed	4.4	6.2	2.2
whole	4.4	6.2	5.2
Values per 125 ml			

- (i) A bowl contains **25 g of cereal** and **125 ml of milk**.
What is the total fat content of this serving if **whole milk** is used? [2]

Total fat content = g

- (ii) Which type of milk would you advise someone to drink if they are trying to lose weight? [1]

- (iii) An athlete is increasing the carbohydrate content of his diet.
Give **one** reason why it does not matter which type of milk he drinks. [1]

7. A forensic scientist may use flame tests to find out if a certain chemical is present. The flame colour will be different for different chemicals.

Chemical	Symbol	Flame colour
calcium	red
copper	blue/green
lead	Pb	blue/white
potassium	K	lilac
sodium	Na	orange

(a) **Complete** the table to show the symbols for calcium and copper. [2]

(b) All the chemicals shown in the table are metals.
Give **two** properties of metals. [2]

1.

2.

(c) A powder was found at a crime scene.
It was dissolved in water and two tests were carried out.

(i) A wire loop was used to carry out a flame test.
The flame was bright orange.
Name the metal present in the powder. [1]

(ii) Acid was added to the solution.
A gas was produced.
The gas turned limewater milky.
Name the gas that was produced. [1]

(iii) Use the results to put a tick (✓) in the box next to the type of powder in the sample. [1]

Metal nitrate

Metal chloride

Metal carbonate

BLANK PAGE

SECTION B (12 marks)

Answer **all** the questions in the spaces provided.

8. Scientists think that type 2 diabetes is related to obesity.

Obesity can be measured by the Body Mass Index (BMI).
BMI is found using the equation:

$$\text{BMI} = \frac{\text{mass(kg)}}{\text{height}^2(\text{m}^2)}$$

- (a) (i) Find the BMI for Tom who has a mass of 90 kg and a height of 1.5 m. [2]

BMI = kg/m²

- (ii) Use the information below to identify the body type for Tom. [1]

- A BMI less than 18.5 is *underweight* body type
- A BMI of 18.5-24.9 is *normal weight* body type
- A BMI of 25.0-29.9 is *overweight* body type
- A BMI of 30.0-39.9 is *obese* body type
- A BMI of 40.0 or higher is *severely (or morbidly) obese* body type

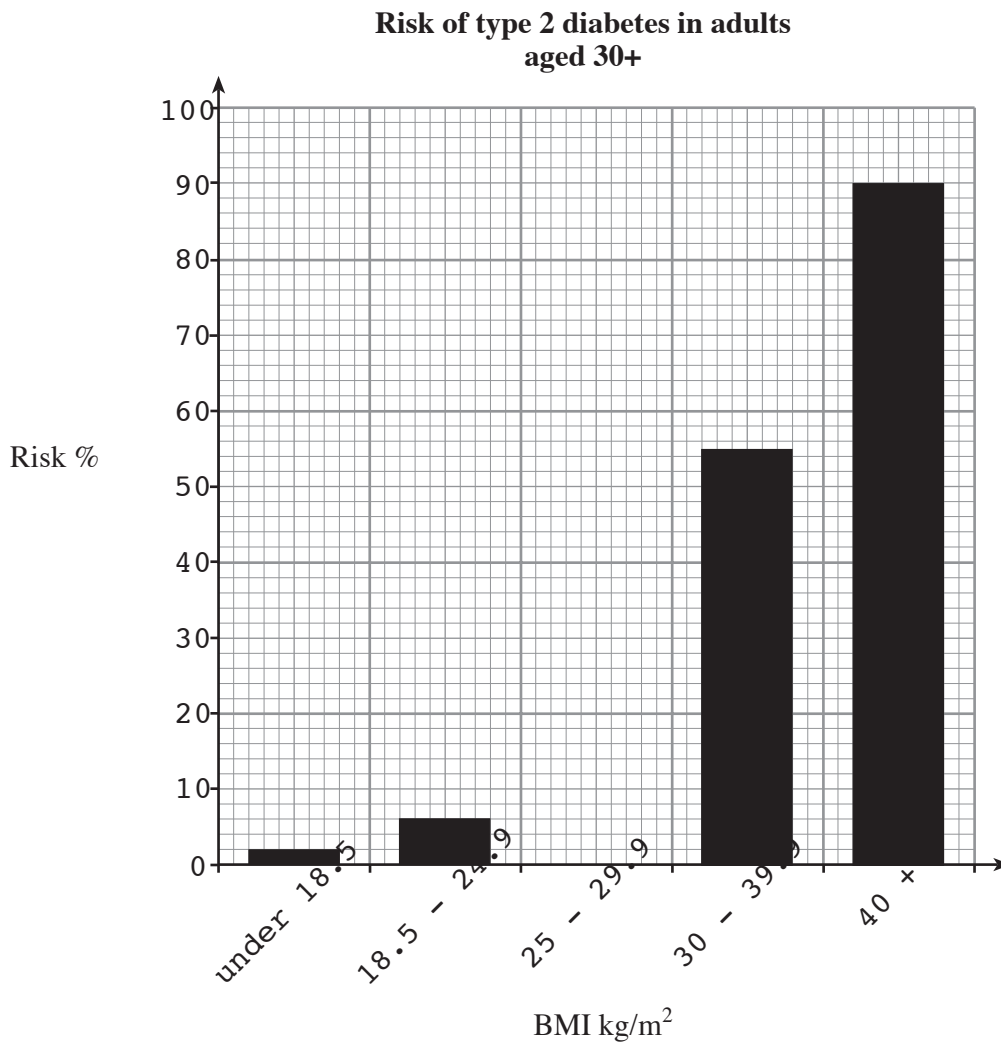
Tom's body type is

(b) The link between BMI and the risk of type 2 diabetes is shown in the table.

BMI	Risk of type 2 diabetes %
under 18.5	2
18.5-24.9	6
25-29.9	30
30-39.9	55
40+	90

(i) Use the information from the table to complete the chart below.

[1]



(ii) What is the risk of Tom developing type 2 diabetes? [1]

(iii) What is the risk of a normal weight body type developing type 2 diabetes?

..... [1]

B3

9. (a) There are over one million fingerprint records stored in the UK.

Name the most suitable method of storing this number of fingerprint records. [1]

.....

(b) Name the type of fingerprint shown in each of the photographs below. [2]



Name

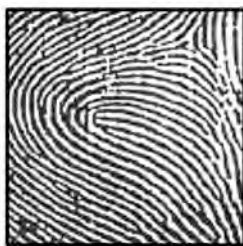


Name

(c) The fingerprint below was found at a crime scene.



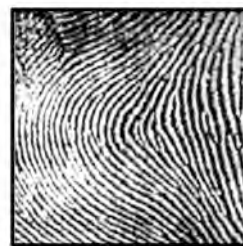
Fingerprints A, B and C come from different suspects.



A



B



C

(i) Which suspect's fingerprint is the closest match to the one found at the crime scene?

..... [1]

- (ii) Fingerprints are matched by finding many identical features on both prints.
One feature has been circled on the diagram below for you.



Circle **two** more features that could be used to show a match.

[2]