

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

A324/02

Candidates answer on the question paper.
A calculator may be used for this paper.

OCR supplied materials:
None

Other materials required:

- Pencil
- Ruler (cm/mm)

**Wednesday 15 June 2011
Morning**

Duration: 45 minutes



| | | | |
|-----------------------|--|----------------------|--|
| Candidate forename | | Candidate surname | |
|-----------------------|--|----------------------|--|

| | | | | | | | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|
| Centre number | | | | | | Candidate number | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|

MODIFIED LANGUAGE

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

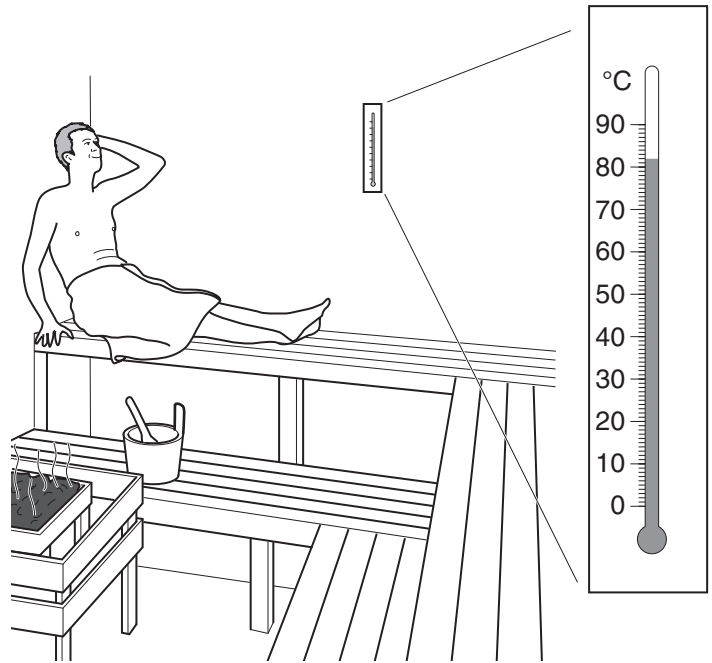
INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **36**.
- This document consists of **8** pages. Any blank pages are indicated.

Answer **all** the questions.

1 A sauna has been built at Mike's local fitness centre.

Mike uses the sauna.



The thermometer shows the temperature of the sauna.

(a) Describe **two** ways Mike's body changes in this temperature.

- 1
-
- 2
- [3]

(b) At Mike's fitness centre there are lots of advertisements and leaflets for different public health campaigns. The advertisements and leaflets suggest ideas to help him improve his health and fitness.

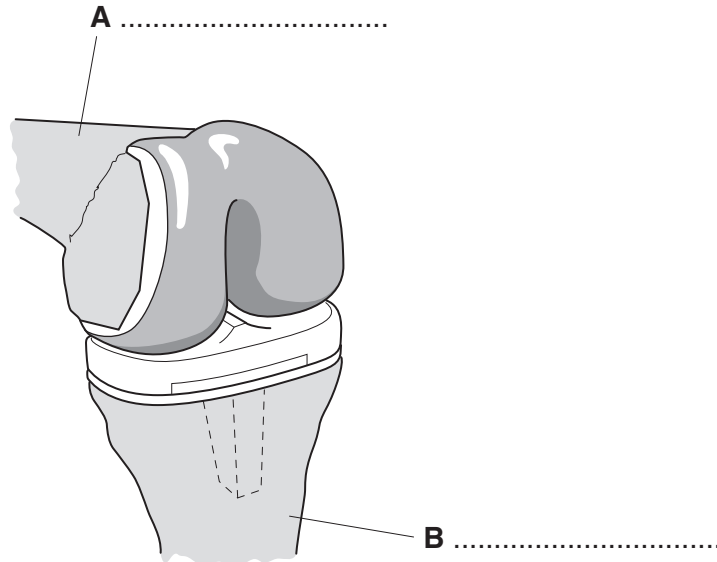
Describe one public health campaign aimed at improving someone's health or fitness.

-
-
- [2]

[Total: 5]

2 Mark had an operation on his knee.
An artificial knee joint was fitted.
The diagram shows Mark's new knee joint.

(a) (i) Complete the diagram by giving the name of the two bones labelled **A** and **B**.



[2]

(ii) The ligaments and tendons are **not** shown in the diagram, but they are necessary for a knee joint to work.

Describe the role of a ligament and a tendon.

1 ligament

2 tendon

[2]

(b) Mark will have to see several health practitioners before he can leave hospital.
One of these health practitioners is a physiotherapist.

(i) Describe the role of a physiotherapist.

..... [2]

(ii) Describe **two** advantages of patients and their health practitioners having regular contact.

..... [2]

[Total: 8]

3 (a) Ahmed works in the hospital accident and emergency unit.

The list describes his patients.

- A a man with a suspected broken arm
- B an unconscious person who is not breathing
- C a teenager with a small cut on the finger
- D a woman complaining of chest pains
- E a man wanting batteries for his hearing aid

He has to prioritise patients for emergency treatment.

Write the letters **A**, **B**, **C**, **D** and **E** in the boxes to show the order in which Ahmed should prioritise the patients.

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

most urgent

less urgent

[3]

(b) Ahmed refers patients for further techniques and treatment.

Some of these techniques are non-invasive.

(i) Suggest **two** advantages of using a non-invasive technique.

- 1
- 2 [2]

(ii) There are a number of different non-invasive techniques used in hospitals.

Draw a straight line from each **technique** to its correct **description**.

Then draw another straight line from each **description** to its correct **use**.

Two lines have been done for you.

| technique | description | used to diagnose |
|------------|---|-----------------------|
| ultrasound | uses radio waves and a strong magnetic field | joint problems |
| MRI | uses a series of X-ray images to generate a 3-D image | fetal abnormalities |
| PET | uses sound waves | bleeding in the brain |
| CAT | uses a radioactive sugar injected into the blood and picks up the gamma rays produced | brain tumours |

[4]

[Total: 9]

- 4 The World Health Organisation (WHO) recommends cutting down on our daily intake of salt. The table shows the change in blood pressure with different daily amounts of salt intake.

| salt intake in mmol/24h | average systolic blood pressure in mmHg |
|-------------------------|---|
| 90 | 107 |
| 130 | 112 |
| 160 | 115 |
| 190 | 123 |
| 220 | 126 |
| 250 | 130 |
| 280 | 135 |
| 310 | 142 |

- (a) (i) Plot a graph of the effect of increasing salt intake on blood pressure.

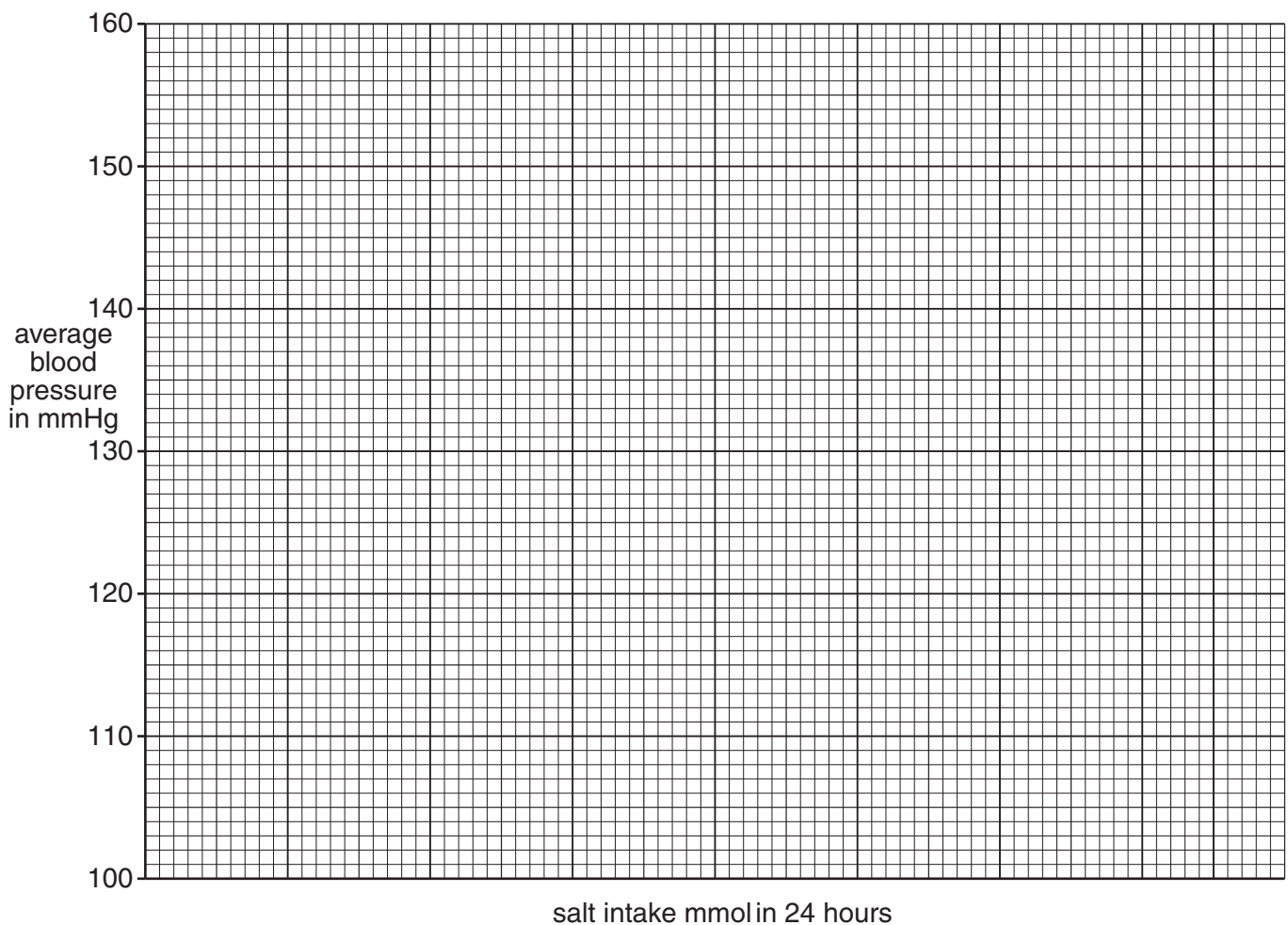
You will need to choose a suitable scale for the salt intake axis.

Your scale for salt intake must be from 0–400 mmol in 24 hours.

[2]

- (ii) Finish the graph by drawing the best line through the points.

[1]



(b) (i) Blood pressure above 150 mmHg is called 'high blood pressure'.

Use your graph to work out the average daily intake of salt that might cause 'high blood pressure'.

Show on your graph how you worked out your result.

..... mmol/24h [1]

(ii) A weak pulse rate can mean that a patient has low blood pressure.

Suggest one other possible cause for a weak pulse.

..... [1]

(iii) Patients with high blood pressure are given drugs to lower their blood pressure.

Explain why the patients are not all given the same drug.

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

[Total: 7]

5 Amanda is worried about inheriting breast cancer. She uses her computer to visit OPERA (Online Personal Education and Risk Assessment). OPERA works out the risks of Amanda developing breast cancer. The Risk Assessment is based on her family history of the disease. OPERA is run by the National Health Service.

(a) Describe **three other** functions of the National Health Service.

1
.....
2
.....
3
..... [3]

(b) Thousands of people are tested for breast cancer every year. An invasive diagnostic test may be carried out if the tests give a positive result.

(i) Explain why the risk to the patient must be assessed before any invasive diagnostic test is carried out.

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

(ii) Suggest why some breast cancer treatments may not be provided to every patient with breast cancer.

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

[Total: 7]

END OF QUESTION PAPER



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