

<b>Candidate forename</b>		<b>Candidate surname</b>	
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<b>Centre number</b>						<b>Candidate number</b>				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**A324/02**

**TWENTY FIRST CENTURY SCIENCE  
ADDITIONAL APPLIED SCIENCE A**

**Life Care (Higher Tier)**

**WEDNESDAY 15 JUNE 2011: Morning**

**DURATION: 45 minutes**

**SUITABLE FOR VISUALLY IMPAIRED CANDIDATES**

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

**OCR SUPPLIED MATERIALS:**

**Graph for Q4**

**OTHER MATERIALS REQUIRED:**

**Pencil**

**Ruler (cm/mm)**

**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

- **Write your name, centre number and candidate number in the boxes on the first page. 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.**

## **INFORMATION FOR CANDIDATES**

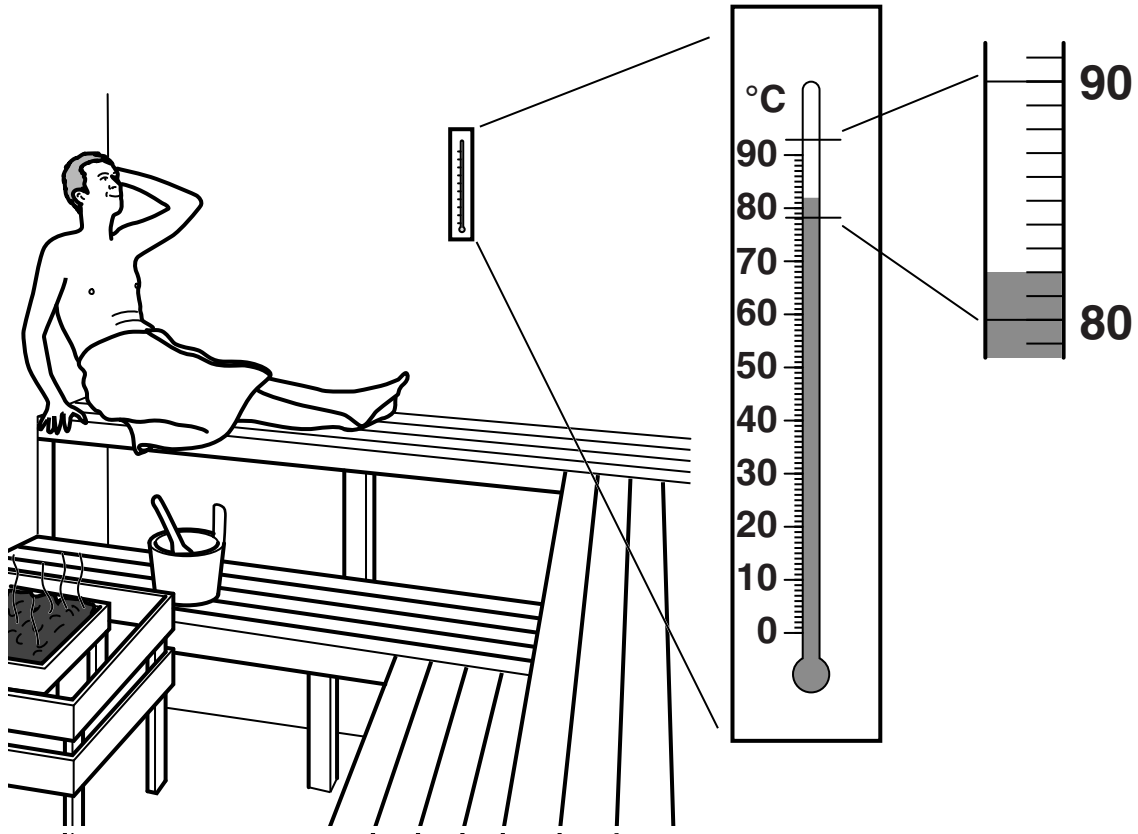
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **The total number of marks for this paper is 36.**

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Answer ALL the questions.

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

Mike tries out the sauna.



The thermometer shows the temperature of the sauna.

(a) Describe TWO ways Mike's body responds to this temperature.

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_ [3]

**(b) At Mike's fitness centre there are lots of advertisements and leaflets with ideas to help him improve his health and fitness.**

**Describe one example of a public health campaign aimed at improving someone's health or fitness.**

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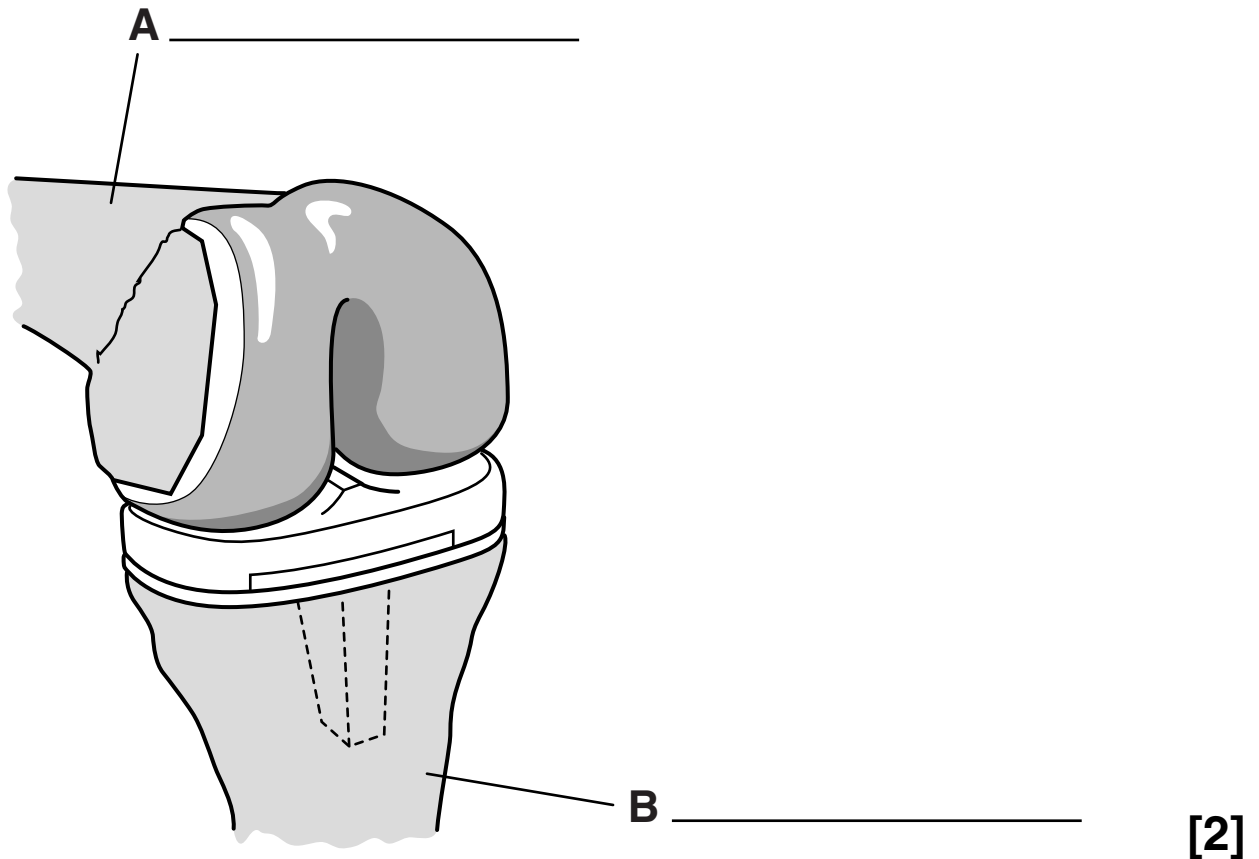
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**[2]**

**[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 naming the two bones labelled A and B.**



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

**Describe the role of a ligament and a tendon.**

**1 ligament \_\_\_\_\_**

\_\_\_\_\_

**2 tendon \_\_\_\_\_**

\_\_\_\_\_ [2]

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

**(i) Describe the role of a physiotherapist.**

\_\_\_\_\_ [2]  
\_\_\_\_\_

**(ii) Describe TWO advantages of regular contact between patients and their health practitioners.**

\_\_\_\_\_ [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.**

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**[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.

<b>TECHNIQUE</b>	<b>DESCRIPTION</b>	<b>USED TO DIAGNOSE</b>
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 salt intake. The table shows the change in blood pressure with different daily amounts of salt intake.

<b>SALT INTAKE IN mmol/24h</b>	<b>AVERAGE SYSTOLIC BLOOD PRESSURE IN mmHg</b>
<b>90</b>	<b>107</b>
<b>130</b>	<b>112</b>
<b>160</b>	<b>115</b>
<b>190</b>	<b>123</b>
<b>220</b>	<b>126</b>
<b>250</b>	<b>130</b>
<b>280</b>	<b>135</b>
<b>310</b>	<b>142</b>

- (a) (i) Plot a graph, on the separate sheet provided, 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 what average daily salt intake might cause 'high blood pressure'.**

**Show on your graph how you obtained your result.**

\_\_\_\_\_ mmol/24h [1]

- (ii) A low blood pressure is indicated by a weak pulse.**

**Suggest one other possible cause for a weak pulse.**

\_\_\_\_\_ [1]

- (iii) Patients with high blood pressure are given drugs to lower it.**

**Explain why they 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). It works out the risks of Amanda developing breast cancer, 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.**

**If these tests give a positive result, an invasive diagnostic test may be carried out.**

**(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.**

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**[2]**

**[Total: 7]**

**END OF QUESTION PAPER**

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