

Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

A324/01

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

Life Care (Foundation Tier)

MONDAY 18 JANUARY 2010: 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:

None

OTHER MATERIALS REQUIRED:

Pencil

Ruler (cm/mm)

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- Use 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.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

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 Jason wants to join an Antarctic expedition to study penguins.
He has an assessment to check he is healthy enough.

(a) Draw a straight line from each HEALTH TEST to the correct PIECE OF APPARATUS USED.

HEALTH TEST

PIECE OF APPARATUS USED

pulse

sphygmomanometer

temperature

stopwatch

blood pressure

scales

body mass

clinical thermometer

[3]

(b) Antarctica is very cold.

Penguins have a thick covering of feathers to keep them warm.

Jason buys special clothing to try to keep him warm.

His body will still react to the cold weather.

Describe TWO ways in which Jason's body will react to the cold.

1 _____

2 _____ [2]

[Total: 5]

**2 Margie’s hip hurts when she walks.
Her doctor thinks she needs an operation to replace a
hip joint.**

**(a) The diagram on the page opposite shows where a
new hip joint would fit.**

**Complete the labels for the diagram.
Choose words from this list.**

CLAVICLE

FEMUR

HUMERUS

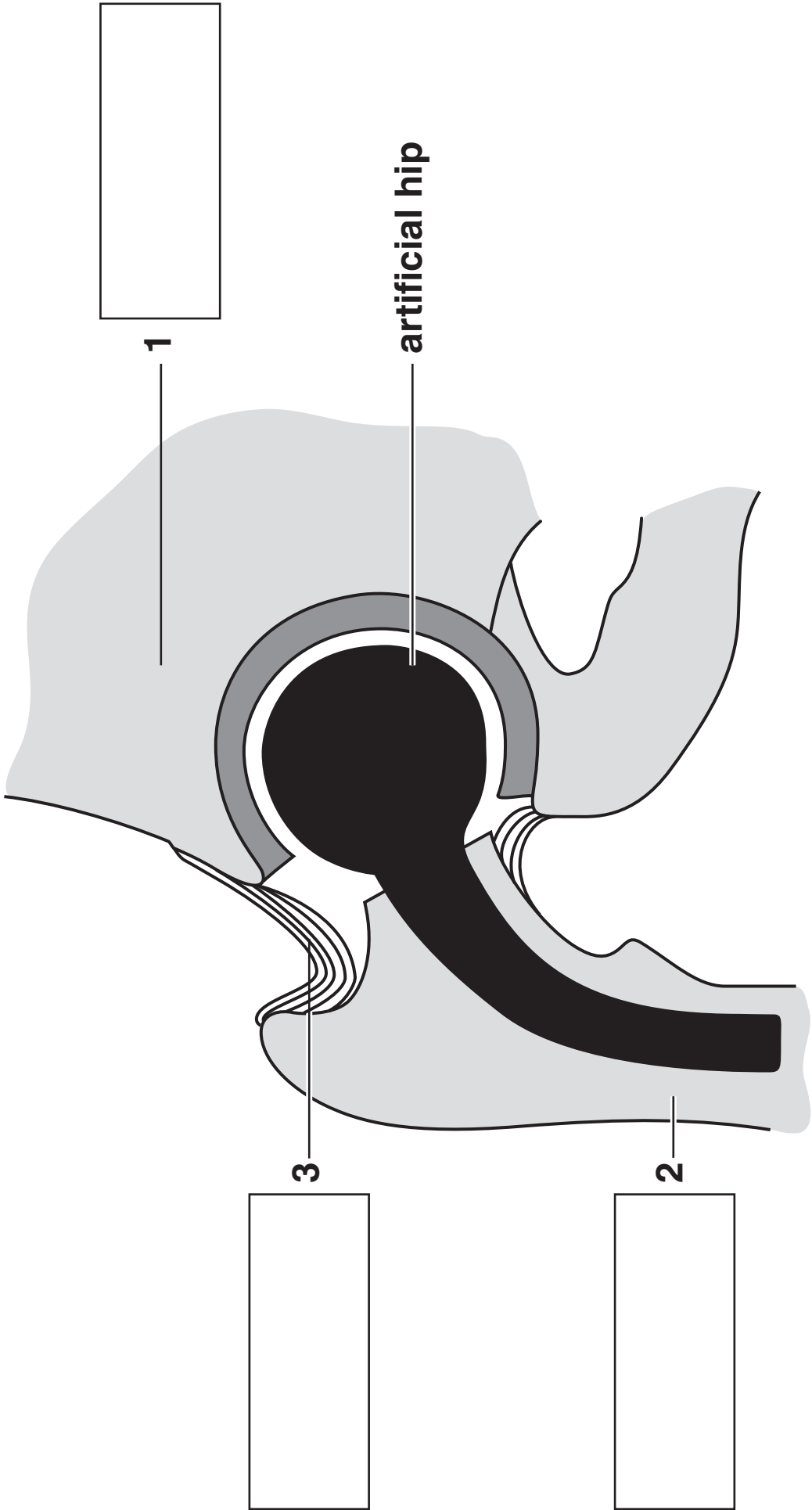
LIGAMENT

MUSCLE

PELVIS

TENDON

[3]



(b) Margie’s doctor refers her to the local hospital. At the hospital a non-invasive technique is used to look at her hip joint.

(i) Name ONE non-invasive technique that could be used.

_____ [1]

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

_____ [2]

(c) The specialist examines the results and explains the options available to Margie. Explain why Margie should consider carefully whether to have the operation or not.

_____ [2]

[Total: 8]

**3 Simon is in hospital recovering from an accident at home.
He damaged his back and is learning to walk again.
A physiotherapist visits Simon every day.**

**(a) (i) Which one of the following BEST describes what the physiotherapist does?
Put a tick (✓) in the box next to the best answer.**

helps Simon deal with lifestyle changes he has to make

prepares Simon for surgery

helps organise an exercise programme for Simon

prescribes pain killers to relieve Simon's pain

[1]

(ii) Explain why accurate record keeping during treatment is necessary.

_____ **[1]**

**(b) After the accident Simon was taken to the nearest hospital.
He was then assessed and transferred to a hospital over 100 miles away.
Suggest why Simon was transferred to a different hospital.**

_____ **[2]**

[Total: 4]

**4 Ramona is pregnant.
She visits her midwife regularly.**

(a) Give TWO reasons for these visits.

1 _____

2 _____ [2]

(b) Ramona visits the hospital to have an ultrasound scan of her baby.

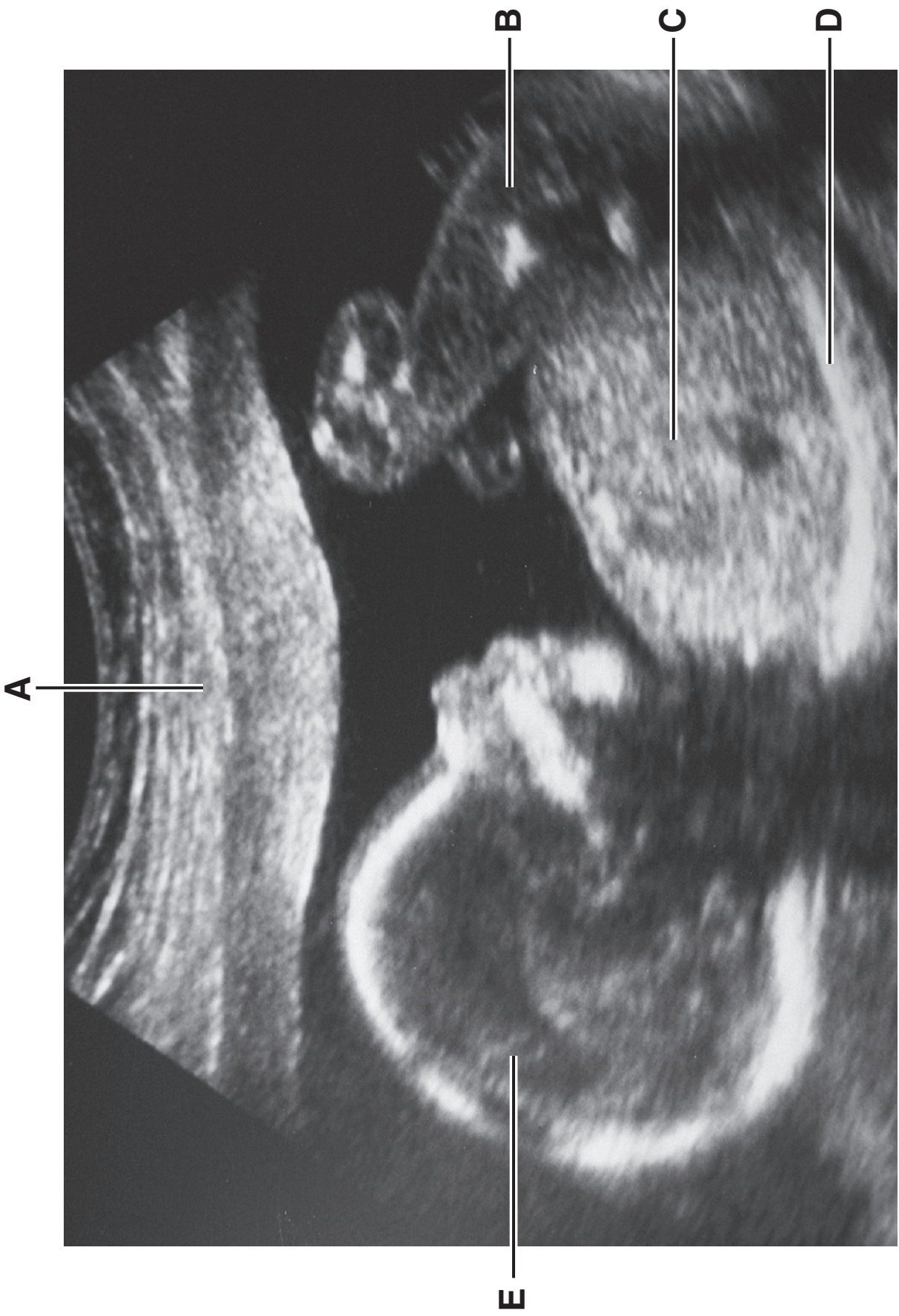
The page opposite shows the scan of her baby.

(i) Which of A, B, C, D or E labels the head?

_____ [1]

(ii) Which of A, B, C, D or E labels a leg?

_____ [1]



(c) Ramona is also given a blood test.

(i) The following statements describe how to take a blood test.

They are in the wrong order.

A a needle is inserted into the vein

B pressure and a sterile dressing are applied

C a suitable vein is located and the skin is cleaned with alcohol

D a strap is tightened around the upper arm

Put the statements A, B, C, and D, in the correct order.

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[2]

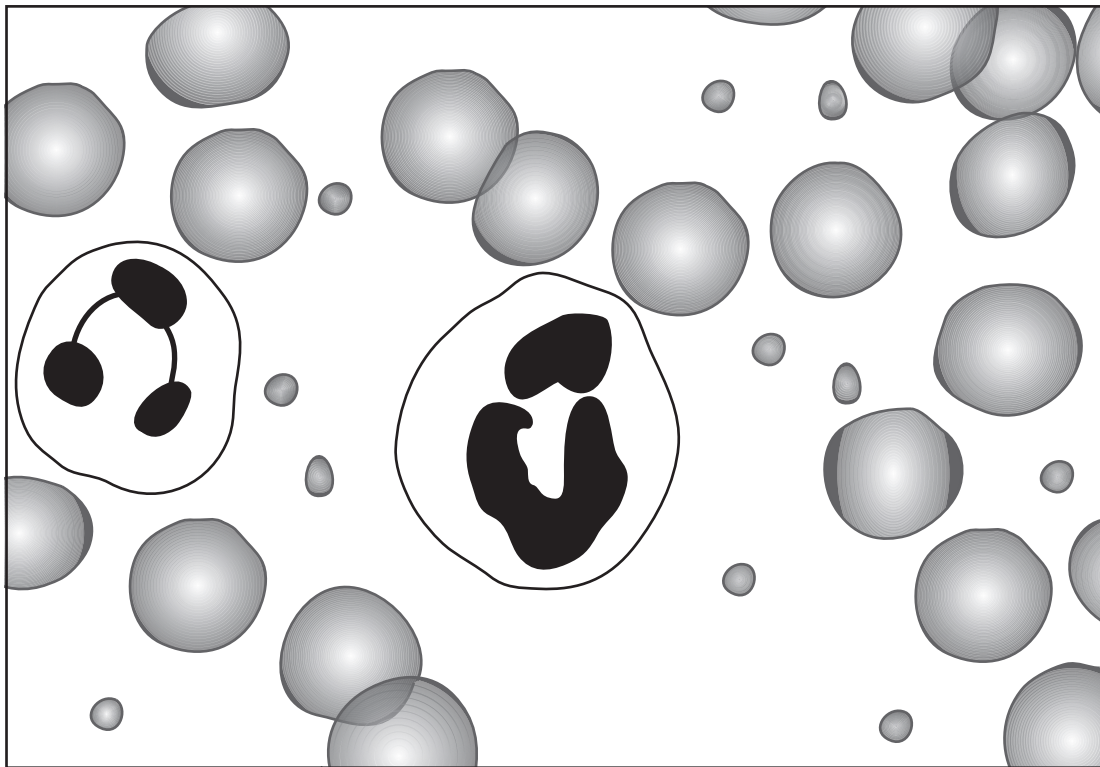
(ii) Ramona had a blood test early in her pregnancy.

This confirmed she was pregnant.

Suggest ONE other diagnosis that might be obtained from a blood test.

_____ **[1]**

(iii) Look at the diagram of Ramona's blood.



platelet

**red
blood
cell**

**white
blood
cell**

Draw a straight line from each label to the correct part of Ramona's blood.

[2]

[Total: 9]

**5 Sam and Farouk join their local gym.
They are both 16 year old boys.**

They answer a LIFESTYLE questionnaire to help their personal trainer.

(a) (i) Put ticks (✓) in the boxes next to the THREE factors they should be asked about.

alcohol consumption

blood group

current medication

criminal record

dietary requirements

foot size

general level of physical activity

[3]

(ii) They are also asked about their smoking habits.

Explain why this information is needed.

[1]

(b) A step test is designed to assess aerobic fitness. Both boys complete a step test. Here are their results.

NAMES	LENGTH OF TEST IN SECONDS	PULSE RATE 1	PULSE RATE 2	PULSE RATE 3
Farouk	300	80	70	65
Sam	300	124	100	76

$$\text{The test score} = \frac{\text{length of test in seconds} \times 100}{(\text{pulse 1} + \text{pulse 2} + \text{pulse 3}) \times 2}$$

This gives Farouk a score of 70.

**(i) Calculate the test score for Sam.
Show your working.**

Score is _____ [2]

- (ii) Farouk's girlfriend has a step test score of 64. The chart shows how the score relates to aerobic fitness.

MALE SCORE	FEMALE SCORE	FITNESS LEVELS FOR 16 YEAR OLDS
over 90	over 86	excellent
80-90	76-86	above average
65-79	61-75	average
55-64	50-60	below average
below 55	below 50	poor

Use the chart to work out the fitness levels of Farouk and his girlfriend.

Farouk _____

Farouk's girlfriend _____

[1]

[Total: 7]

6 The National Health Service in England employs more people than any other organisation in Europe. Which THREE of the following features BEST describe the aims of the National Health Service?

Put ticks (✓) in the THREE correct boxes.

to advertise new drugs

to allocate resources when and where they are needed

to make health care available to all citizens

to monitor national health trends

to promote pregnancy testing

to test out new medicines

[3]

[Total: 3]

END OF QUESTION PAPER

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