THIS IS A NEW SPECIFICATION

OCR
RECOGNISING ACHIEVEMENT

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Monday 14 January 2013 – Morning

GCSE ADDITIONAL APPLIED SCIENCE

A191/01 Science in Society (Foundation Tier)

A134320113

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)

Duration: 1 hour

A191010

Candidate forename		Candidate surname	

Centre number						Candidate number				

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. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- 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).
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- Your quality of written communication is assessed in questions marked with a pencil (✎).
- 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 **50**.
- This document consists of **12** pages. Any blank pages are indicated.

Answer **all** the questions.

1 Dave and Gill decide to get fit.
They train at the local gym.

(a) Any fitness programme should always start with a baseline assessment.

Draw straight lines to connect each **term** about baseline assessment to its correct **example**.

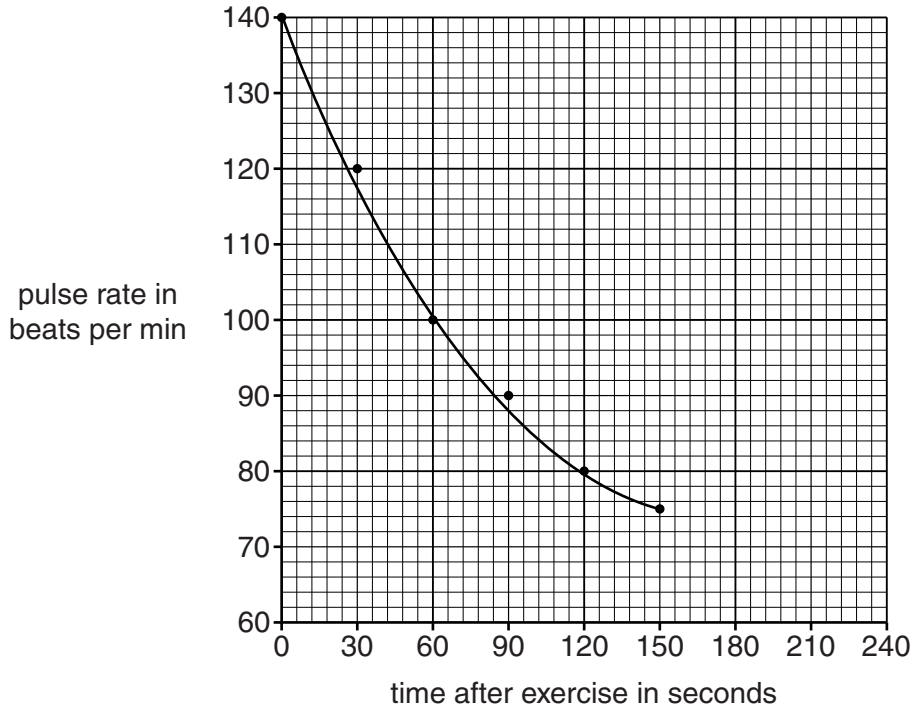
term	example
lifestyle	how quickly you recover after exercise
health	whether or not you have had your flu jabs this year
fitness	whether or not you get stressed easily

[2]

(b) They both do the same exercise.
After exercise they both have their pulse rate monitored by their trainer.
These are the results.

Time after exercise in seconds	Pulse rate in beats per min	
	Dave	Gill
0	140	130
30	120	110
60	100	90
90	90	80
120	80	70
150	75	70

Dave's results have been plotted on the graph shown on page 3.



(i) Plot Gill's results on the graph. **[2]**

(ii) Dave and Gill's normal resting pulse rate is 70 beats per minute.
Estimate how many seconds in total it takes for Dave's pulse rate to return to its normal resting rate.

answer ..... seconds **[1]**

(iii) The trainer concludes that Gill is fitter than Dave.
Is the trainer correct?
Use data from the graph to explain your answer.

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

(iv) It is important that Dave and Gill's trainer collects information about how fit they are.
Suggest **two** reasons why.

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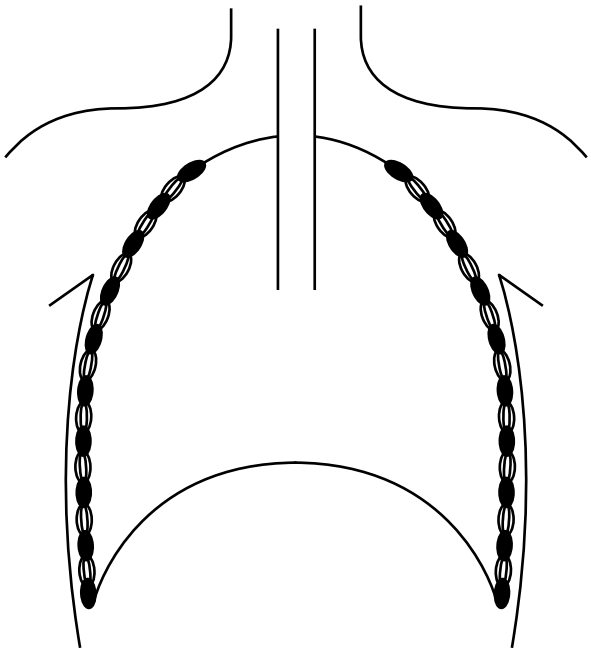
..... **[2]**

[Total: 9]

2 Sport and fitness trainers need to understand how the human body works.

Complete and label the diagram to show the location of the following parts of the human breathing system **and** explain what happens when a person **breathes in**.

- ribs
- intercostal muscles
- diaphragm
- lungs
- trachea
- bronchus and bronchioles



The quality of written communication will be assessed in your answer.

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..... **[6]**

[Total: 6]

3 The kidneys are important organs in the body.
Their job is to filter blood.

(a) Blood contains red blood cells, white blood cells and platelets.

(i) Explain the job carried out by **each** of these three components.

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

(ii) Suggest why the kidneys do **not** filter these three components out of the blood.

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

(b) Describe **two specific** roles carried out by the kidneys.

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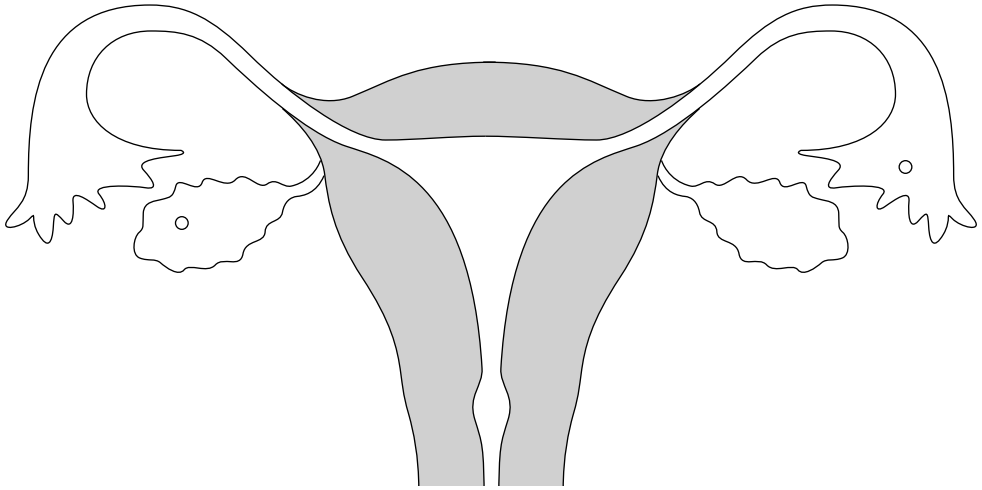
..... **[2]**

[Total: 6]

4 Sunita would like to have a baby.

(a) The diagram shows Sunita's reproductive organs.



(i) Label an egg on the diagram. **[1]**

(ii) Draw an X on the diagram where an egg would normally be fertilised. **[1]**

(iii) Draw a Z on the diagram where the fertilised egg will normally implant. **[1]**

(b) Sunita becomes pregnant and gives birth to a premature baby.
The premature baby is assessed by a doctor.
The doctor uses this table to calculate the baby's APGAR score.

Observations	**Scores 0**	**Scores 1**	**Scores 2**
Appearance	blue or pale all over	pink body but pale or blue fingers	pink all over
Pulse	0	less than 100	100 or more
Grimace	no response to stimulation	feeble grimace or feeble cry when stimulated	cry or pull away when stimulated
Activity	no bending of joints	joints bend easily	joints bend with resistance from the baby
Respiration	no breathing	weak irregular breathing	strong deep regular breathing

Sunita's premature baby is breathing normally.
Its pulse rate is 92 beats per minute.
Its body is pink but the hands and feet are white.
The doctor can bend the baby's knee easily.
The baby clearly cries when picked up.

(i) Calculate the baby's APGAR score.
Use the table to show your working.

A	
P	
G	
A	
R	

APGAR score = ... **[1]**

(ii) Explain what this score means for the premature baby.

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

(iii) Suggest **two** reasons why this score cannot be completely accurate.

1 .....

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2 .....

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[2]

(c) The doctor needs to carry out a small medical procedure on the baby.
The doctor knows that the procedure carries a small element of risk.

Suggest why the doctor carries out the procedure even though there is an element of risk.

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

[Total: 9]

5 Good laboratory practice is essential for producing reliable evidence.
A scene of crime officer collects fibres from a murder scene.

Describe and explain the stages in the collection of the fibres, their storage, and their identification.

The quality of written communication will be assessed in your answer.

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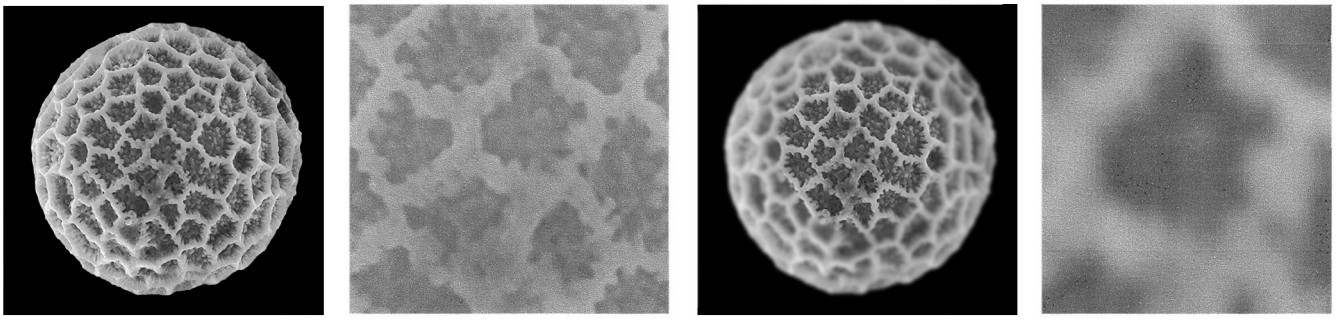
[Total: 6]

6 A forensic scientist used an electron microscope to obtain images of a pollen grain.



A **B** **C** **D**

Use the images, **A**, **B**, **C** and **D**, to explain the meaning of the following terms that the scientist might use.

Write the letter **A**, **B**, **C** or **D** in the correct box next to each statement.

The image that …

… is the least focussed. ☐

… has the least contrast. ☐

… has the greatest magnification. ☐

… has the greatest depth of field. ☐

[4]

[Total: 4]

7 Colorimeters can be used to get quantitative data.

Explain how you would use a colorimeter to produce quantitative data about the concentration of a food dye in a child's fruit drink.

The quality of written communication will be assessed in your answer.

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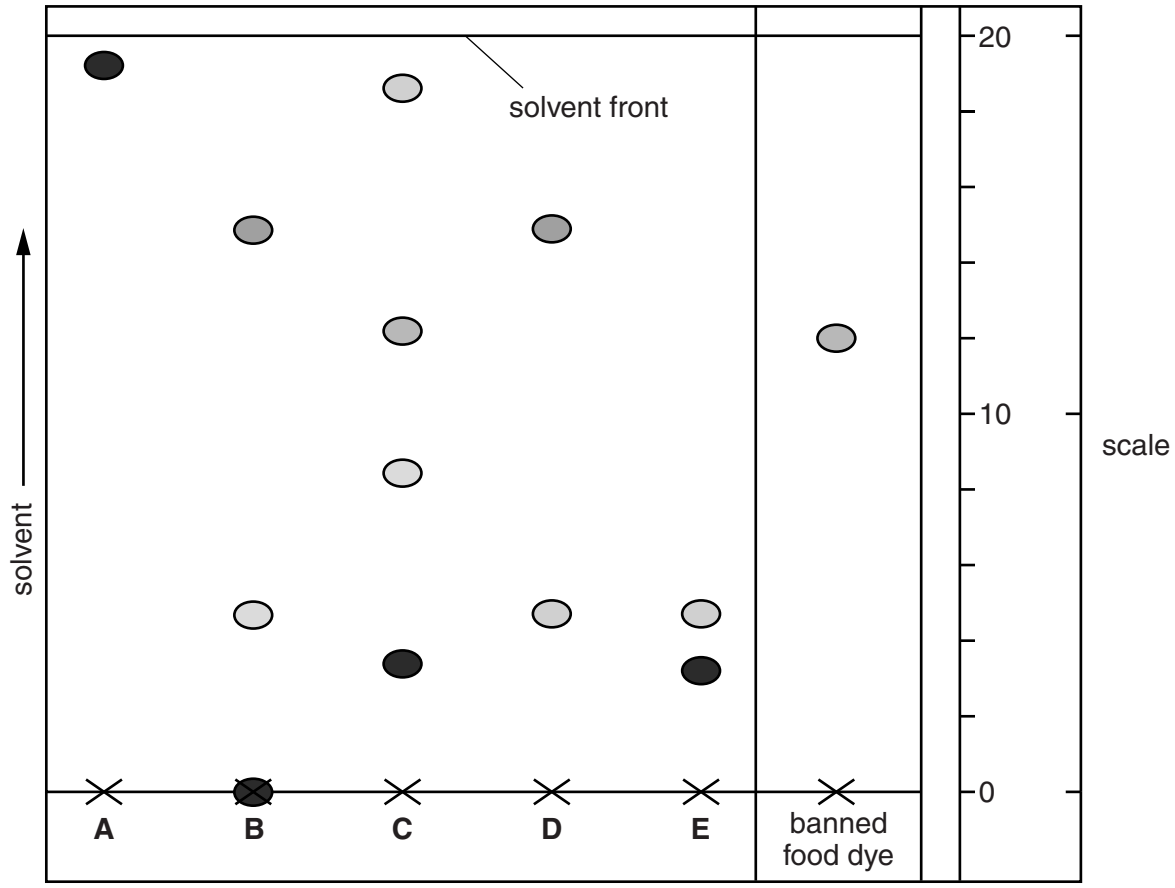
..... **[6]**

[Total: 6]

8 Stefan is a food scientist.
He tests children's fruit drinks to see if they contain a **banned food dye**.
He tests five drinks, **A**, **B**, **C**, **D** and **E**, using paper chromatography.



(a) Use the scale on the chromatogram to calculate the Rf of the banned food dye.
Show your working.

Rf = ... **[2]**

(b) **(i)** Which drink, **A**, **B**, **C**, **D** or **E**, contains a dye with the same Rf value?

answer ..... **[1]**

(ii) Why does having the same Rf value not conclusively prove that the drink contains the banned food dye?

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

[Total: 4]

END OF QUESTION PAPER

PLEASE DO NOT WRITE ON THIS PAGE