

Friday 16 June 2017 – Morning

GCSE ADDITIONAL APPLIED SCIENCE

A191/01 Science in Society (Foundation Tier)

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

- Pencil
- Ruler (cm/mm)
- Calculator

Duration: 1 hour



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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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 barcodes.

INFORMATION FOR CANDIDATES

- The 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 Medical staff must respond quickly to emergencies.

(a) Draw one straight line from each **response** to an **explanation** of what the response involves.

response	explanation
triage	Make notes about previous medical conditions and lifestyle.
history	Find out what is wrong with the patient.
diagnosis	Prioritise patients so those in a critical condition get treated first.
treatment	Give medical care to combat the disease or disorder.

[2]

(b) Patients or their relatives need to give informed consent before treatment can begin.

Put a tick (✓) in the boxes next to the **two** best reasons why.

To ensure that the patient or their relatives are fully informed of ...

... what the treatment involves.

... the cost of the treatment.

... the doctors and nurses who will be involved in the treatment.

... how long the treatment will take.

... where the treatment will take place.

... the risks and benefits of the treatment.

[2]

(c) General Practitioners (GPs) often refer patients to specialist services.

Put ticks (✓) in the boxes next to the **two** statements which, when taken together, best explain why.

There are more GPs than specialist services.

GPs are trained to treat all conditions.

GPs need to be able to identify what is wrong with a patient and how best to treat the condition.

Specialist services can treat more complicated conditions.

It would be too expensive to provide all GPs with equipment such as MRI scanners.

There are more specialist services than GPs.

[2]

[Total: 6]

- 3 Neil falls and hurts his leg.
He goes to his local Accident and Emergency Department.
The doctor sends him for an X-ray.



- (a) Look at the X-ray of Neil's leg.

What conclusions can you make about Neil's injury from the image of the X-ray?

.....
.....
.....
..... [3]

- (b) The doctor puts Neil's leg into a plaster cast.
When it is removed, Neil goes to see a physiotherapist.

Describe what the physiotherapist does when she treats Neil's leg.

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

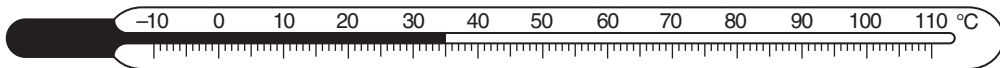
[Total: 5]

4 Rebecca is a paramedic. She is called to a patient. She takes the patient's temperature with a clinical thermometer.

(a) Describe and explain how she would carry out this procedure.

.....
.....
.....
..... [3]

(b) The image shows the clinical thermometer after the reading was taken.

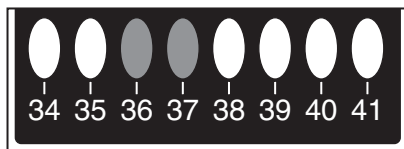


Normal human body temperature is 37°C.

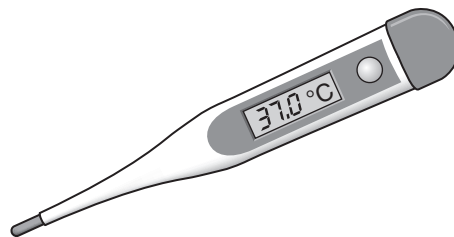
What conclusions can be made about the patient's condition and what treatment should Rebecca give?

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

(c) The patient's body temperature could also have been measured using a liquid crystal display or an electronic sensor.



liquid crystal



electronic sensor

Suggest which of the **three** instruments, clinical thermometer, liquid crystal, or electronic sensor, would be **least** accurate.

Explain your answer.

.....
.....
.....
..... [3]

[Total: 8]

- 6 Humans need to breathe clean unpolluted air.
 Air pollution is measured using the Air Quality Index (AQI).
 The table below describes the health risks and gives advice for different levels on the AQI.

AQI	Health risk	Advice
1 – 3	Low	Behave as normal out of doors.
4 – 6	Moderate	Reduce strenuous exercise outdoors.
7 – 10	High	Reduce strenuous exercise outdoors. People with breathing problems should only go outside for short periods of time.
>10	Very high	Do not undertake strenuous exercise outdoors. People with breathing problems should stay indoors.

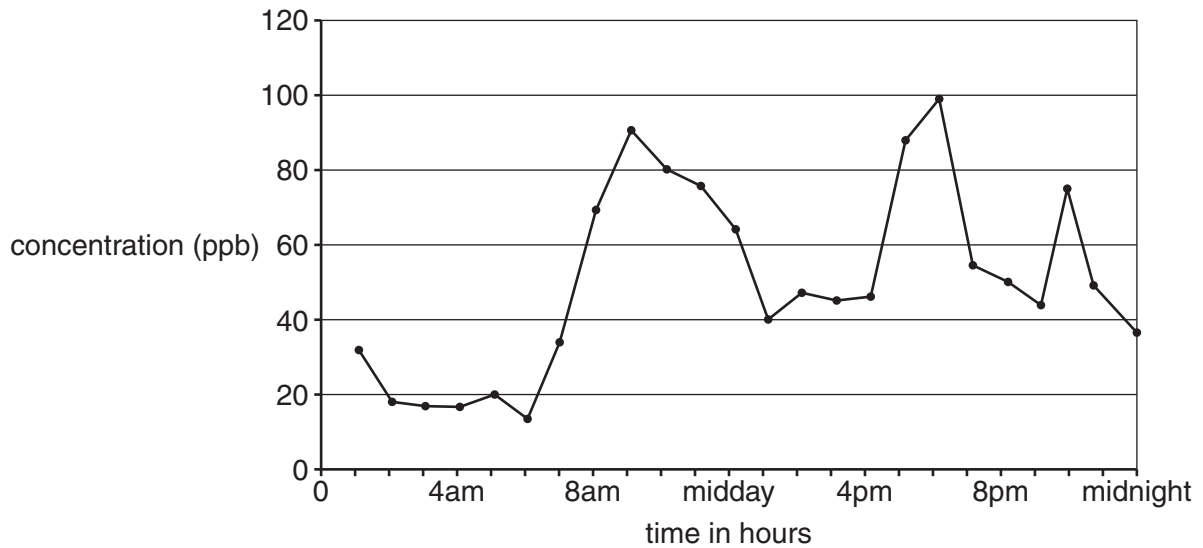
- (a) Explain the reasons for the advice given at an AQI greater than ten.

.....

.....

..... [2]

- (b) The graph shows the concentration of pollution from car exhausts in a city centre. Concentration of pollutants is in parts per billion (ppb).



- (i) At what time was the lowest level of pollution measured?

..... [1]

- (ii) The highest levels of pollution occurred at 9.00 am and 6.00 pm. Suggest why.

..... [1]

- (iii) What advice would you give to cyclists who use the city centre, based on the evidence from this graph?

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

[Total: 5]

8 Electrophoresis is an important technique used by forensic scientists.

(a) Which of these statements about electrophoresis are correct?

Put a tick (✓) in the box next to the **two** correct statements.

Electrophoresis ...

... uses colour to identify substances.

... uses a scanning electron microscope.

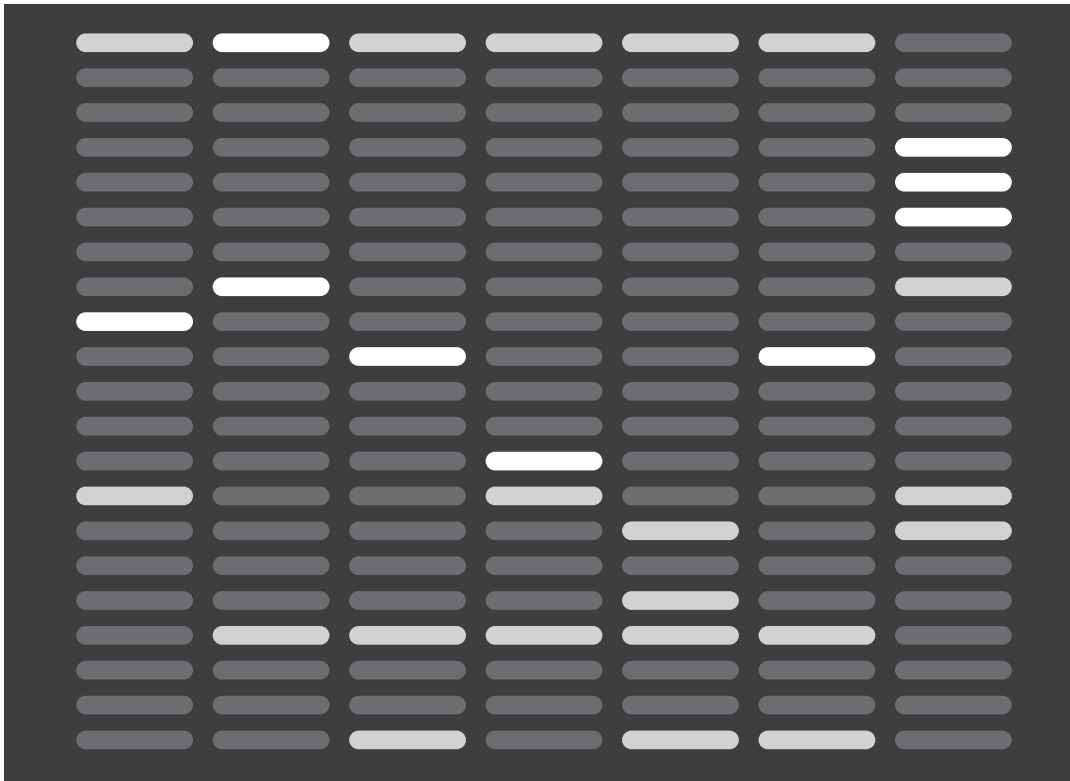
... can be used on small biological samples.

... can separate biological molecules.

... measures the intensity of a colour.

[2]

(b) Look at the electrophoresis chart.



(i) Explain how scientists would use this chart to identify a crime suspect from their DNA.

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.....

[3]

Turn over

- (ii) A horse breeder wants to find out which of two male horses is the father of a newborn horse.

Suggest and explain how this could be done.

.....

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.....

.....

..... [3]

[Total: 8]

END OF QUESTION PAPER



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