

GCSE BITESIZE Examinations

General Certificate of Secondary Education

AQA SCIENCE A BLY1A

Unit Biology B1a (Human Biology)

AQA BIOLOGY

Unit Biology B1a (Human Biology)

FOUNDATION TIER

Specimen Paper

Time allowed: 30 minutes

Maximum marks: 36

Instructions

- Answer **all** of the questions for the Tier you are attempting.
- Record your answers on a separate answer sheet only.
- Do all rough work in this book - **not** on your answer sheet.

Advice

- Do **not** choose more responses than you are asked to. You will lose marks if you do.

FOUNDATION TIER

SECTION ONE

Questions **ONE** to **FIVE**

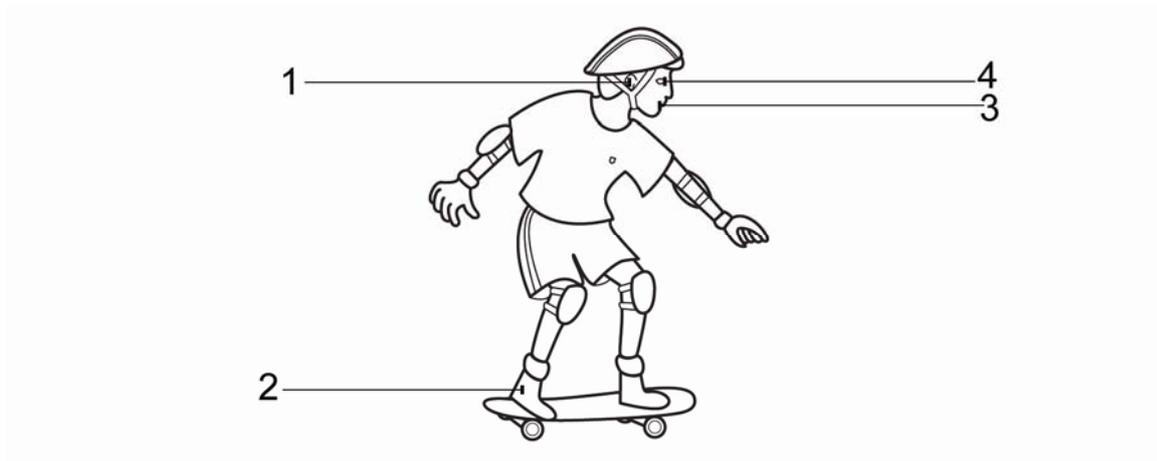
In these questions, match the letters **A**, **B**, **C** and **D** with the numbers **1-4**.

Use **each** answer only **once**.

Mark your choice on the answer sheet.

QUESTION ONE

The drawing shows a skateboarder:



The skateboarder uses different receptors while he is skateboarding.

Match statements **A**, **B**, **C** and **D** with the labels **1-4** on the drawing.

- A** contains receptors which enable him to taste the food he is chewing.
- B** contains receptors which help him to maintain his balance on the skateboard.
- C** contains receptors which enable him to feel the skateboard.
- D** contains receptors which enable him see where he is going.

QUESTION TWO

Thalidomide is a drug which was developed in the 1950s, but was later banned.

Match phrases **A**, **B**, **C** and **D** with the numbers **1-4** in the sentences.

- A** leprosy sufferers.
- B** people suffering from sleeping problems.
- C** babies.
- D** pregnant women.

Thalidomide was first developed and tested as a drug to treat ...**1**....

It was soon found to be effective at relieving morning sickness in ...**2**....

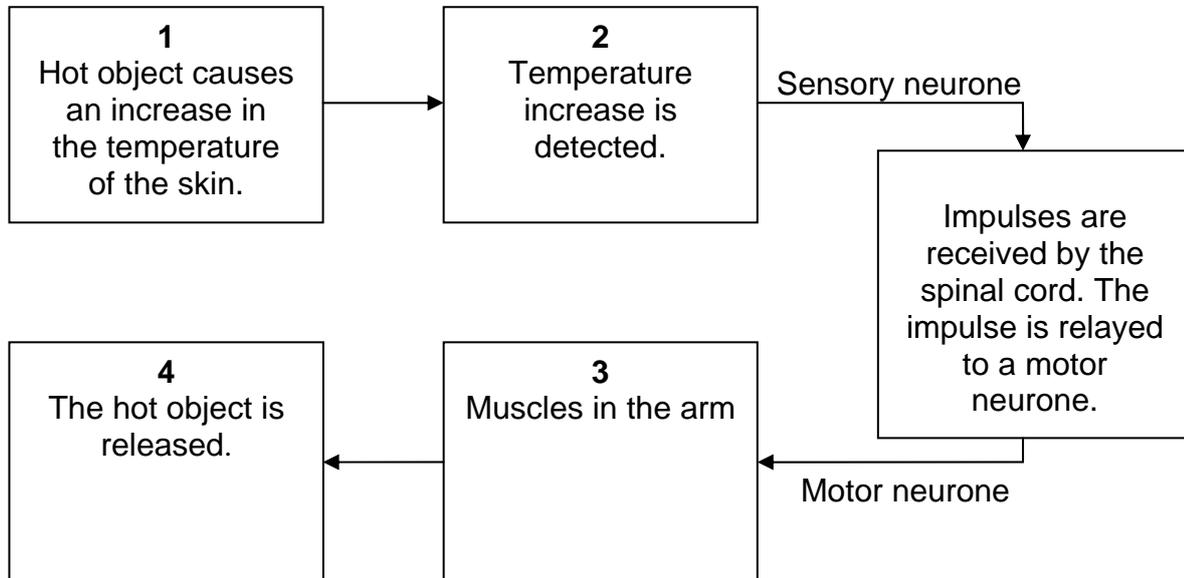
However, the drug had not been tested for this use. The drug resulted in the development of limbs with stunted growth in ...**3**.....

Following the discovery of this, Thalidomide was banned. However, it has recently been used successfully in treating ...**4**....

Turn over ►

QUESTION THREE

Someone picks up a hot object, which they very quickly let go of and drop. The diagram below shows the stages involved in this reflex response:



Match the words **A**, **B**, **C** and **D** with the boxes labelled **1-4** in the diagram.

- A** Receptor
- B** Effector
- C** Response
- D** Stimulus

Turn over ►

QUESTION FOUR

Pathogens cause illness when they infect our bodies.

Match phrases **A**, **B**, **C** and **D** with the numbers **1-4** in the sentences.

- A** antibiotics
- B** vaccines
- C** toxin
- D** antibodies

Bacteria make us unwell when they produce ...**1**....

White blood cells defend us against pathogens by producing ...**2**....

Drugs that are used to kill bacteria are called ...**3**....

To protect people against pathogens before they catch them, scientists have developed ...**4**.... against the most serious strains.

Turn over ►

QUESTION FIVE

This question is about drugs.

Match drugs **A**, **B**, **C** and **D** with the numbers **1-4** in the sentences.

- A** alcohol
- B** cannabis
- C** painkillers
- D** statins

Drugs are chemicals which alter the way the body works.

Some drugs are used medically. Patients with high cholesterol levels are often prescribed ...**1**....

Patients with a bacterial or viral infection often take ...**2**... to relieve the symptoms.

However, some drugs are harmful. One widely consumed drug that can damage the liver and brain is ...**3**....

Another harmful drug that has been linked to mental illness, and can lead to people using harder drugs, is ...**4**....

Turn over ►

SECTION TWO

Questions **SIX** to **NINE**

Each of these questions has four parts.

In each part, choose only **one** answer.

Mark your choices on the answer sheet.

QUESTION SIX

6A A diet that is high in salt may result in...

- 1 high blood pressure.
- 2 diabetes.
- 3 irregular periods.
- 4 reduced immunity to disease.

A survey carried out by compared the amount of salt (sodium chloride) in different brands of crisps. The results are shown in the table below:

Brand of crisps	Sodium level in mg per 100g of crisps
Golden Wonder Lightly Salted	1,400
Hula Hoops Original	1,200
Hula Hoops Salt & Vinegar	1,500
Kettle Chips NY Cheddar	500
Pringles Original	540
McCoy's Cheddar & Onion	900
Skips	1,500
Walkers Ready Salted	700
Walkers Salt & Vinegar	1,200
Mean salt level	1,048.9

Turn over ►

6B What was the sensitivity of the technique used to measure the sodium levels per 100g of crisps?

- 1 0.1 mg
- 2 1 mg
- 3 10 mg
- 4 100 mg

In addition to eating a balanced diet, it is recommended that you take regular exercise.

A group of scientists performed an investigation to establish how much energy is used by the body during different levels of exercise:

Intensity of exercise	Activity	Energy used by average male in kJ per hour	Energy used by average female in kJ per hour
Nil	Sleeping	300	250
Light	Walking (stroll)	500	415
Moderate	Walking (brisk)	1,000	830
	Dancing	1,250	1,050
Heavy	Jogging (brisk)	2,000	1,650
	Swimming	3,010	2,500

6C The reliability of this data would **not** be improved by...

- 1 repeating the measurements several times for each person tested.
- 2 doing the sample on a larger number of men and women.
- 3 measuring their results in Joules per hour instead of in Kilojoules per hour.
- 4 comparing the results against the published work of other scientists.

6D If an average male was to do 30 minutes of swimming per day, how much energy would he use up in a week?

- 1 8,750 kJ
- 2 10,535 kJ
- 3 14,000 kJ
- 4 21,070 kJ

Turn over ►

QUESTION SEVEN

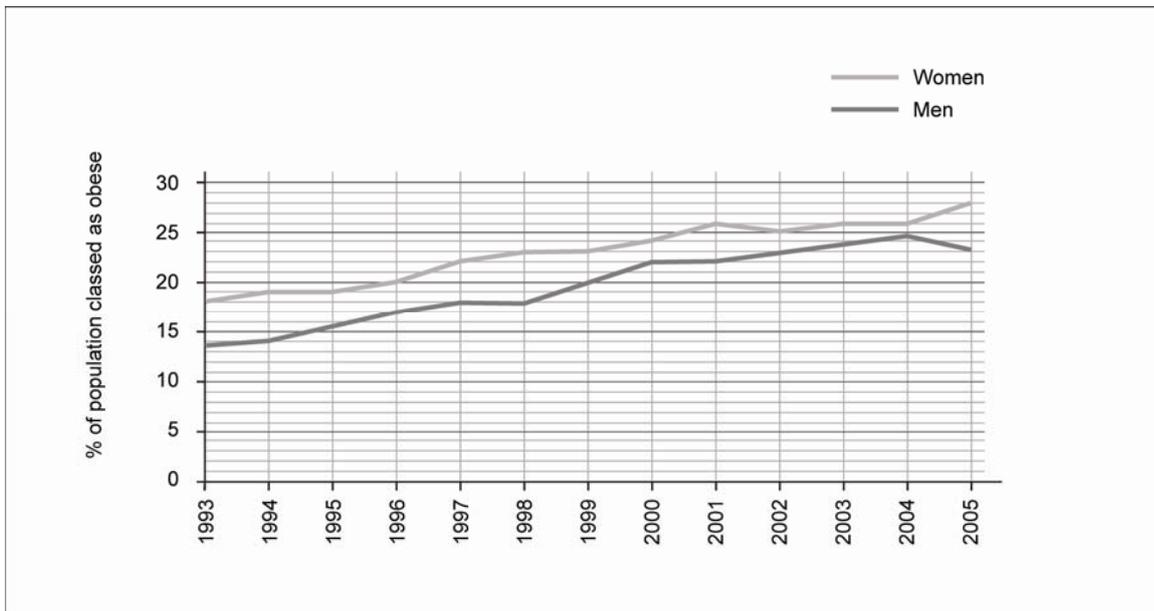
Obesity is one of the biggest health concerns in the developed world.

7A Which of the following is **not** linked to obesity?

- 1 Higher salt levels in food
- 2 Lower levels of exercise
- 3 Eating more processed foods
- 4 Eating too much food

The graph below shows the change in obesity levels among men and women in England between 1993 and 2005:

Graph showing the percentage of the population of England classified as obese using the BMI index



Turn over ►

7B How much higher was the percentage of obese women in 2005 compared with 2000?

- 1 1.5 per cent
- 2 2 per cent
- 3 4 per cent
- 4 10 per cent

7C Why is the data represented as a percentage of the population instead of a number of people?

- 1 It makes it easier to make predictions from the data.
- 2 The number of people would be too large a number to fit on the y axis.
- 3 It allows for a valid comparison from year to year, accounting for changes in population levels.
- 4 It is easier to spot any anomalous results.

7D Which conclusion can be drawn from the data?

- 1 Obesity levels in men and women have risen every year since 1993.
- 2 Obesity has generally increased in developed countries since 1993.
- 3 Obesity levels have doubled during the period 1993-2005.
- 4 Obesity levels in England are higher among women than men.

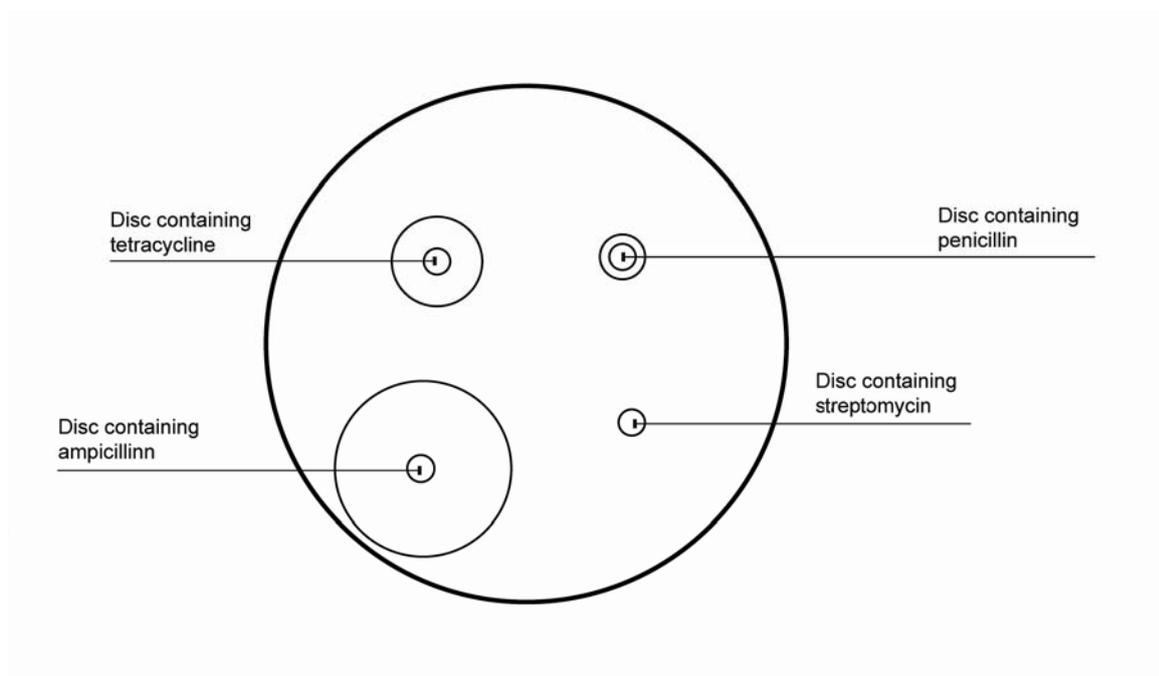
Turn over ►

QUESTION EIGHT

An investigation was carried out to determine which antibiotic was most effective at killing a species of bacteria.

The bacteria were spread onto an agar plate. Then four discs soaked with different antibiotics were placed on the surface of the agar. The plates were incubated for 48 hours, to allow the bacteria to reproduce.

The diagram below shows the results. The grey areas represent areas where the bacteria grew. The white areas represent areas where the bacteria did not grow.



8A The independent variable in this investigation was the type of antibiotic.

What kind of variable is this?

- 1 Continuous variable
- 2 Discrete variable
- 3 Ordered variable
- 4 Categorical variable

8B The results from this investigation would be best displayed using...

- 1 a scattergram.
- 2 a line graph.
- 3 a bar chart.
- 4 a pie chart.

8C Which antibiotic was most effective at killing the bacteria?

- 1 tetracycline
- 2 ampicillin
- 3 penicillin
- 4 streptomycin

8D Strains of the bacterium *Staphylococcus aureus* have developed which are resistant to several types of antibiotic. Scientists have named these strains MRSA.

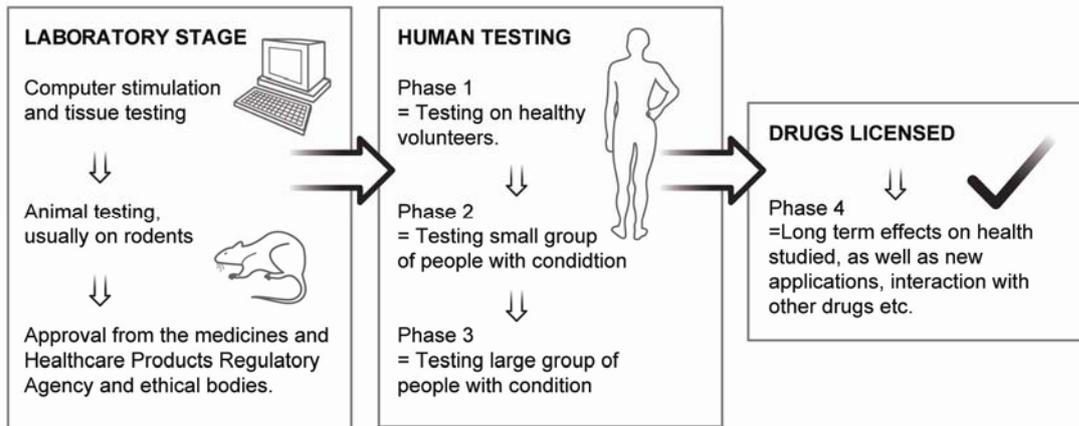
These strains have developed as a result of...

- 1 natural selection.
- 2 selective breeding.
- 3 natural immunity.
- 4 dirty conditions in hospitals.

Turn over ►

QUESTION NINE

Any new medical drug or procedure has to undergo extensive clinical trials. The diagram below shows the stages involved in drug testing in the UK:



9A During human testing, why is the drug tested on healthy volunteers first?

- 1 To test how good the drug is at curing people.
- 2 To test the safety of the drug.
- 3 To test the long-term effects of the drug.
- 4 To compare the drug against other drugs on the market.

Turn over ►

The drug varenicline has been developed to assist smokers in giving up. Following safety testing, it was clinically trialled to compare how well it worked against another anti-smoking drug called bupropion, and a placebo (sugar pill).

Scientists recorded the percentage of volunteers who stopped smoking over three time intervals (12 weeks, 24 weeks and 52 weeks).

The results are shown in the table below:

Tablet taken	Number of people given tablet	Percentage in each group that had stopped smoking...		
		After 12 weeks	After 24 weeks	After 52 weeks
varenicline	352	44	29	22
bupropion	329	29	21	17
placebo	344	18	11	8

9B Using the information in the diagram and the table, at which stage of the drug-testing procedure is this study likely to have taken place?

- 1 Laboratory stage
- 2 Phase 1
- 3 Phase 3
- 4 Phase 4

9C Why did the scientists give some of the volunteers a placebo (sugar pill)?

- 1 To show that the patients could not give up on their own.
- 2 To see the effects that sugar had on the obesity of the volunteers.
- 3 To make varenicline appear more effective than it is.
- 4 To act as a control group which the effectiveness of varenicline could be compared against.

9D The scientists who collected the results deliberately did not know whether the patient was taking the drug or the placebo tablet, as the tablets were prepared by a different group of scientists.

This was done because...

- 1 the scientists taking the results did not have the expertise to prepare the tablets.
- 2 it prevented the scientists who took the samples from influencing the results.
- 3 it eliminated systematic error in collecting the results.
- 4 it spread the workload for the scientists involved in the drug trial.

END OF QUESTIONS