

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

General Certificate of Secondary Education
Winter 2004



SCIENCE: SINGLE AWARD A (MODULAR) 346013
Life and Living Processes (Module 13)

Thursday 18 November 2004 Morning Session

In addition to this paper you will require:

- a black ball-point pen;
- an answer sheet.

You may use a calculator.

Time allowed: 30 minutes

Instructions

- Fill in the boxes at the top of this page.
- Check that your name, candidate number and centre number are printed on the separate answer sheet.
- Check that the separate answer sheet has the title “Life and Living Processes” printed on it.
- Attempt **one Tier only**, **either** the Foundation Tier **or** the Higher Tier.
- Make sure that you use the correct side of the separate answer sheet; the Foundation Tier is printed on one side and the Higher Tier on the other.
- Answer **all** the questions for the Tier you are attempting.
- Record your answers on the separate answer sheet only. Rough work may be done on the question paper.

Instructions for recording answers

- Use a **black ball-point pen**.

- For each answer **completely fill in the circle** as shown:

1	2	3	4
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Do **not** extend beyond the circles.

- If you want to change your answer, **you must** cross out your original answer, as shown:

1	2	3	4
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

- If you change your mind about an answer you have crossed out and now want to choose it, draw a ring around the cross as shown:

1	2	3	4
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Information

- The maximum mark for this paper is 36.

Advice

- Do **not** choose more responses than you are asked to. You will lose marks if you do.
- Make sure that you hand in both your answer sheet and this question paper at the end of the test.
- If you start to answer on the wrong side of the answer sheet by mistake, make sure that you cross out **completely** the work that is not to be marked.

You must do **one Tier** only, **either** the Foundation Tier **or** the Higher Tier.
The Higher Tier starts on page 14 of this booklet.

FOUNDATION TIER

SECTION A

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

In these questions match the words in the list with the numbers.

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

Mark your choices on the answer sheet.

QUESTION ONE

The table is about different receptors in the body of a rabbit.

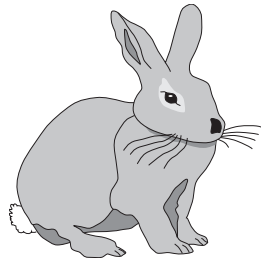
Match words from the list with the numbers **1–4** in the table.

ear

eye

skin

tongue



Part of body	Contains receptors which allow the rabbit to
1	feel the side of the burrow with its thighs.
2	hear a fox approaching.
3	see other rabbits.
4	taste chemicals in the grass.

QUESTION TWO

The diagram shows the position of some organs in the body.

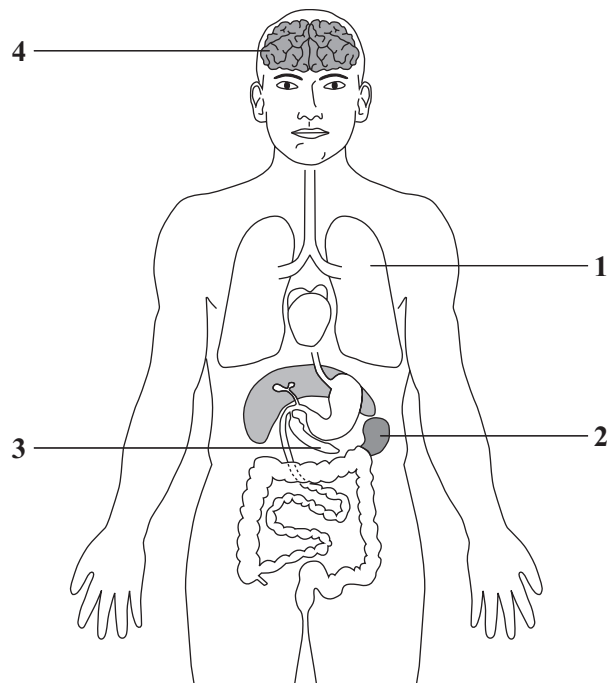
Match words from the list with the labels 1–4 on the diagram.

brain

kidney

lung

pancreas



TURN OVER FOR THE NEXT QUESTION

Turn over ►

QUESTION THREE

The table is about some structures in the body.

Match words from the list with the numbers 1–4 in the table.

blood

cytoplasm

liver

motor neurone

Structure	What it does
1	Carries hormones around the body
2	Produces urea
3	Carries impulses to muscles
4	Where most chemical reactions in a cell take place

QUESTION FOUR

The table is about jobs done by parts of our blood.

Match words from the list with the numbers 1–4 in the table.

plasma

platelet

red blood cell

white blood cell

Part of blood	One job that it does
1	Forms clots at wounds
2	Produces antitoxins
3	Transports most of the oxygen
4	Transports urea

QUESTION FIVE

The drawing shows a group of cells from the breathing system. These cells move mucus out of the lungs.

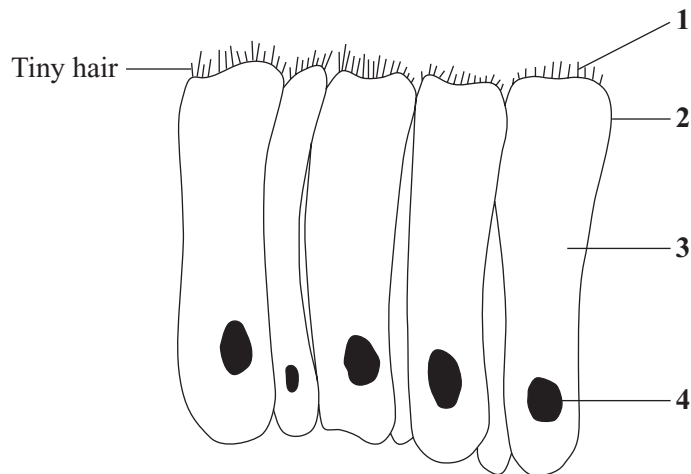
Match words from the list with the labels 1–4 on the drawing.

cell membrane

controls the activities of the cell

cytoplasm

moves the mucus



TURN OVER FOR THE NEXT QUESTION

Turn over ►

NO QUESTIONS APPEAR ON THIS PAGE

SECTION BQuestions **SIX** and **SEVEN**.In these questions choose the best **two** answers.Do **not** choose more than two.Mark your choices on the answer sheet.

QUESTION SIX

The digestive system produces enzymes to break down food.

Which **two** of the following are enzymes?**amylase****bile****glycerol****lipase****lipids****QUESTION SEVEN**

Viruses and bacteria are both microbes.

Which **two** of the following are features of viruses?**cell membrane****cell wall****cytoplasm****protein coat****smaller than bacteria**

Turn over ►

SECTION CQuestions **EIGHT** to **TEN**.

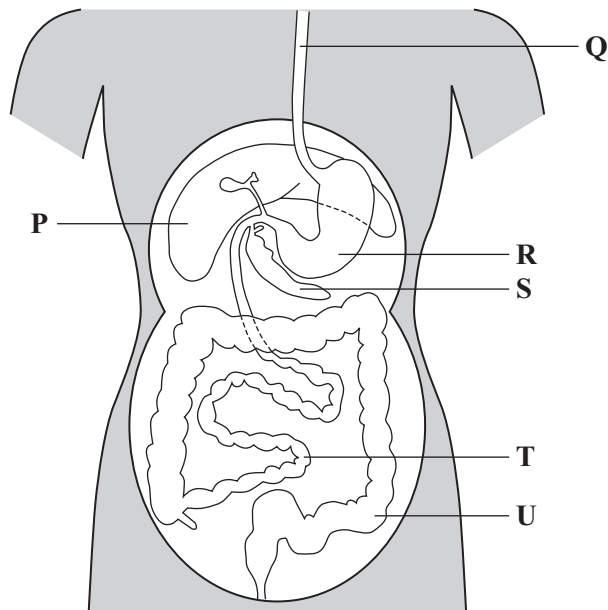
Each of these questions has four parts.

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

Mark your choices on the answer sheet.

QUESTION EIGHT

The diagram shows some of the structures concerned with digestion.

**8.1** The part where the conditions are acidic is

- A Q
- B R
- C T
- D U

8.2 The parts which produce enzymes that digest fat are

- A P and R
- B R and S
- C R and T
- D S and T

8.3 As food passes through the digestive system the amounts of various substances change.

How do the amounts of starch and sugar change as food passes from the mouth to the end of the large intestine?

- A Starch decreases and sugar decreases
- B Starch decreases and sugar increases
- C Starch increases and sugar decreases
- D Starch increases and sugar increases

8.4 Faeces are produced in the

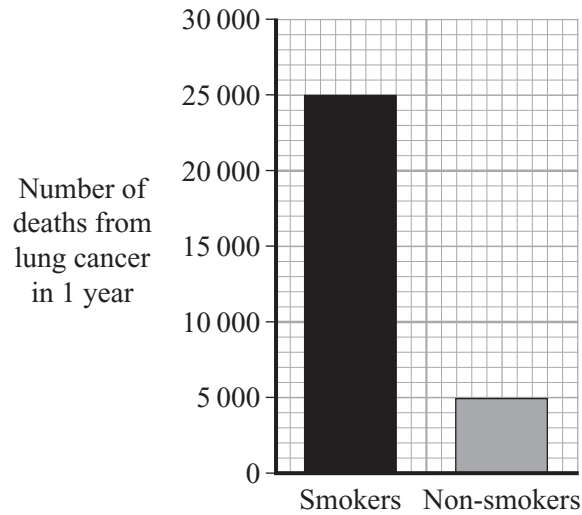
- A large intestine.
- B liver.
- C pancreas.
- D small intestine.

TURN OVER FOR THE NEXT QUESTION

Turn over ►

QUESTION NINE

The chart shows the number of smokers and non-smokers who died from lung cancer in one year in one country.



9.1 What fraction of all the deaths from lung cancer were of people who were smokers?

- A $\frac{1}{6}$
- B $\frac{3}{4}$
- C $\frac{4}{5}$
- D $\frac{5}{6}$

9.2 Which disease is **not** caused by cigarette smoking?

- A Bronchitis
- B Diabetes
- C Emphysema
- D Lung cancer

9.3 The addictive substance in cigarette smoke is

- A** carbon dioxide.
- B** carbon monoxide.
- C** nicotine.
- D** tar.

9.4 Cigarette smoking causes

- A** an increase in the concentration of oxygen in the blood.
- B** lack of self-control.
- C** low birth masses for babies.
- D** slow reactions.

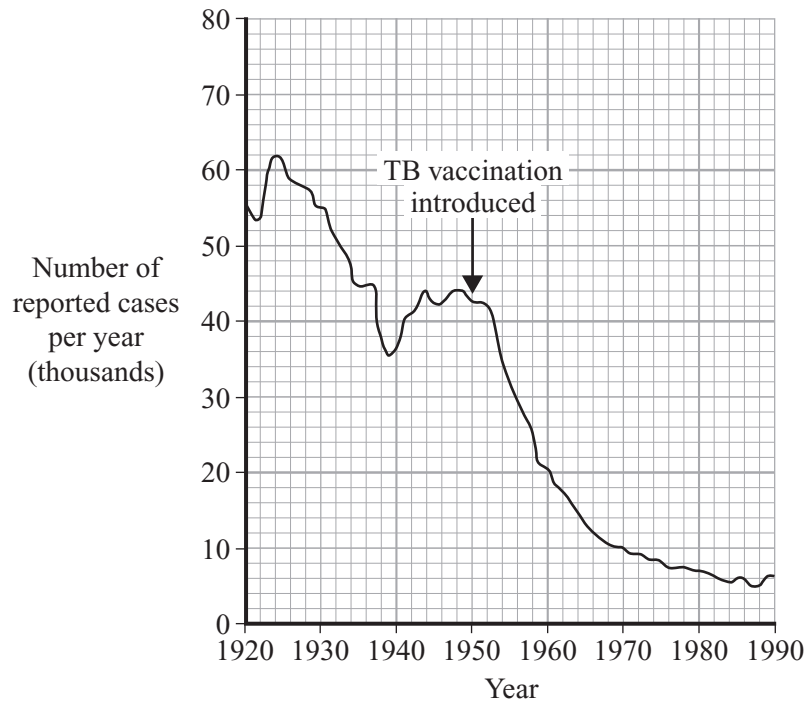
TURN OVER FOR THE NEXT QUESTION

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QUESTION TEN

Tuberculosis (TB) is a disease caused by a bacterium.

The graph shows the number of cases of TB from 1920 to 1990.



10.1 What was the maximum number of reported cases of TB in a year during the period from 1920 to 1990?

- A 60
- B 62
- C 44 000
- D 62 000

10.2 The number of cases of TB decreased after the introduction of vaccination. Vaccination may not have been the only reason for this decrease.

What evidence from the graph suggests that there may have been other reasons?

- A The number of cases decreased between 1925 and 1940
- B The number of cases decreased between 1950 and 1990
- C The number of cases decreased very rapidly between 1950 and 1960
- D The number of cases increased between 1940 and 1950

10.3 The TB vaccination causes

- A an increase in the number of platelets.
- B red blood cells to produce antibodies.
- C white blood cells to produce antibodies.
- D white blood cells to produce toxins.

10.4 TB is spread by breathing in infected droplets which have been coughed out by infected people.

Which of the following is **least** likely to reduce the spread of TB?

- A Isolating people with the disease
- B Vaccinating all adults
- C Vaccinating all children
- D Vaccinating people who have the disease

END OF TEST

You must do **one Tier** only, **either** the Foundation Tier **or** the Higher Tier.

The Foundation Tier is earlier in this booklet.

HIGHER TIER

SECTION A

Questions **ONE** and **TWO**.

In these questions match the words in the list with the numbers.

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QUESTION ONE

The drawing shows a group of cells from the breathing system. These cells move mucus out of the lungs.

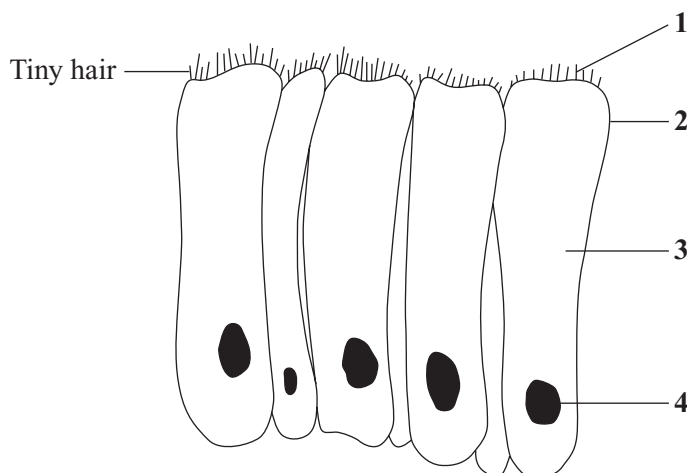
Match words from the list with the labels **1–4** on the drawing.

cell membrane

controls the activities of the cell

cytoplasm

moves the mucus



QUESTION TWO

The eye can see near and distant objects.

Match words from the list with the numbers **1–4** in the sentences.

change shape

contract

focus

slacken

When you want to see a near object clearly, your eye must **1**

To do this the ciliary muscles **2**

This makes your suspensory ligaments **3** allowing the lens to **4**

TURN OVER FOR THE NEXT QUESTION

Turn over ►

NO QUESTIONS APPEAR ON THIS PAGE

SECTION BQuestions **THREE** and **FOUR**.In these questions choose the best **two** answers.Do **not** choose more than two.Mark your choices on the answer sheet.

QUESTION THREE

Viruses and bacteria are both microbes.

Which **two** of the following are features of viruses?**cell membrane****cell wall****cytoplasm****protein coat****smaller than bacteria****QUESTION FOUR**

Drinking alcohol and sniffing solvents can harm the body.

Which **two** of the following are caused by both alcohol and solvents?**changes in the working of the nervous system****damage to the digestive system****damage to the liver****diabetes****heart attacks**

Turn over ►

SECTION CQuestions **FIVE** to **TEN**.

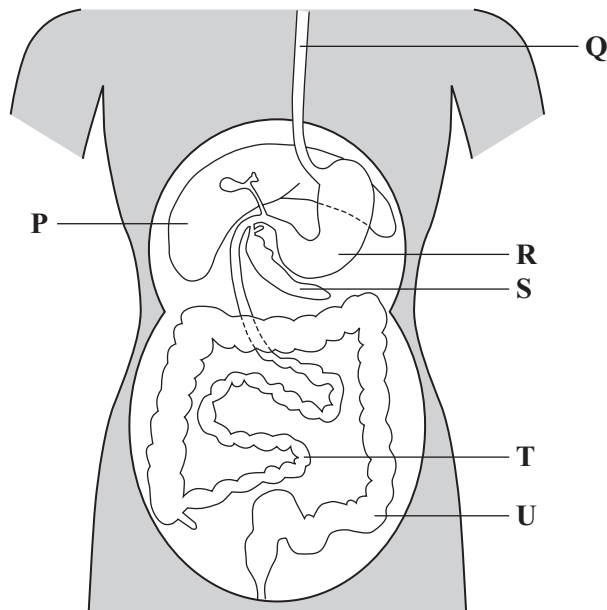
Each of these questions has four parts.

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QUESTION FIVE

The diagram shows some of the structures concerned with digestion.

**5.1** The part where the conditions are acidic is

- A Q
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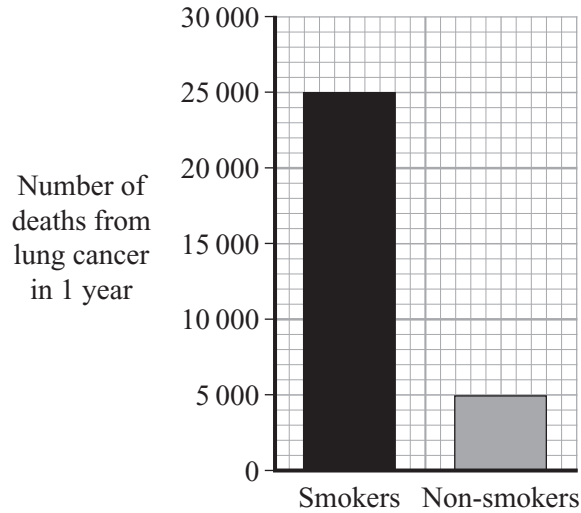
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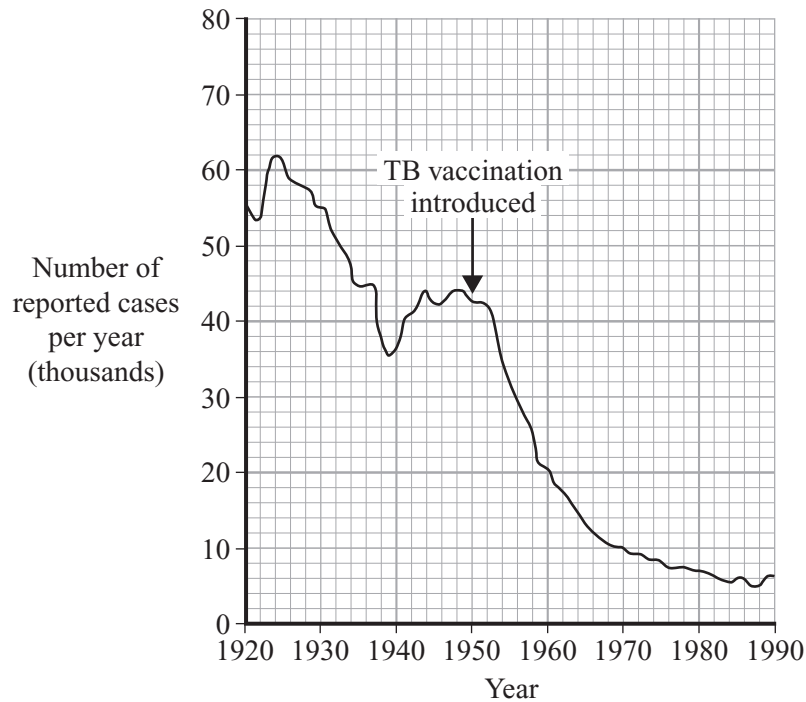
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QUESTION SEVEN

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- C Vaccinating all children
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TURN OVER FOR THE NEXT QUESTION

Turn over ►

QUESTION EIGHT

A student working in a laboratory accidentally touched a hot tripod. He automatically pulled his hand rapidly away from the tripod.

8.1 In this response the hot tripod is

- A the co-ordinator.
- B the effector.
- C the receptor.
- D the stimulus.

8.2 In this response the receptor is in

- A the brain.
- B the muscle.
- C the skin.
- D the spinal cord.

8.3 In this response the effector is

- A a gland.
- B a motor neurone.
- C a muscle.
- D a relay neurone.

8.4 Chemicals released at synapses are involved in

- A sending information across the gap between a sensory neurone and a relay neurone.
- B sending information along sensory neurones.
- C sending information from a motor neurone to a relay neurone.
- D sending information from one end of a relay neurone to the other.

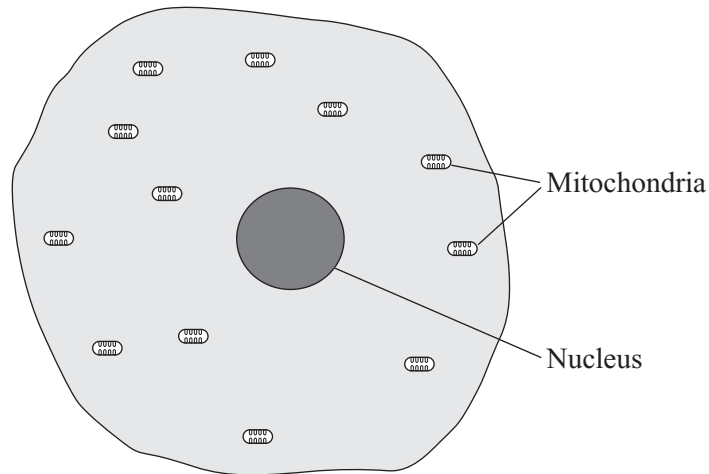
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TURN OVER FOR THE NEXT QUESTION

Turn over ►

QUESTION NINE

The diagram shows a cell from the liver.



9.1 The cell has large numbers of mitochondria.

This enables the cell to

- A carry out diffusion rapidly.
- B digest food materials.
- C maximise energy release in respiration.
- D transport oxygen rapidly.

9.2 To help the digestion of fats, liver cells

- A emulsify fats.
- B produce a starch digesting enzyme.
- C produce bile.
- D produce lipase.

9.3 The liquid produced by the liver helps the digestion of food by

- A breaking down large molecules to small molecules.
- B dissolving the amino acids in the small intestine.
- C making the fat droplets larger.
- D neutralising acid added to the food in the stomach.

9.4 A vein carries blood from the small intestine to the liver.

After a meal the blood in this vein would contain increased amounts of

- A protein and starch.
- B starch and amino acids.
- C starch and sugars.
- D sugars and amino acids.

TURN OVER FOR THE NEXT QUESTION

Turn over ►

QUESTION TEN

The kidney removes waste products from the blood. The table shows the amounts of some of the substances that are:

- filtered from the blood;
- re-absorbed into the blood;
- passed out of the body in urine

during 24 hours.

Substance	Amount		
	Filtered from the blood	Re-absorbed into the blood	Passed out of the body in urine
Glucose in arbitrary units	800	800	0
Sodium ions in arbitrary units	25 200	25 050	150
Urea in arbitrary units	56	28	28
Water in litres	180	178.5	1.5

10.1 What percentage of the filtered water was re-absorbed?

- A 0.83
- B 86.0
- C 99.17
- D 178.5

10.2 The amount of water re-absorbed by the kidneys is controlled by a hormone from the

- A kidney.
- B liver.
- C pancreas.
- D pituitary gland.

10.3 What happens if there is too much water in the blood?

- A** Less water is re-absorbed and the urine becomes more concentrated
- B** Less water is re-absorbed and the urine becomes more dilute
- C** More water is filtered and more water is re-absorbed
- D** More water is re-absorbed and the urine becomes more dilute

10.4 Water is lost from the body in sweat.

Why does sweating cool the body?

- A** Energy is needed to evaporate the sweat
- B** It makes blood capillaries dilate
- C** It makes blood capillaries constrict
- D** Sweat is warmer than blood

END OF TEST