PEARSON EDEXCEL GCSE BIOLOGY (HIGHER) · 1BI0

BIOLOGY



EXAM QUESTION PACK

TOPIC 7: ANIMAL COORDINATION, CONTROL AND HOMEOSTASIS (PACK 1)

SCORE	PERCENTAGE
/51	%

STEMUP

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Q1.

The temperature of Rebecca's brain and of one of her fingers was recorded at six different external temperatures.

temperature / °C		
external	brain	finger
20	36.9	37.0
15	37.0	36.8
10	36.7	36.5
5	36.9	36.2
0	36.8	35.6
-5	37.0	34.3

(a) (i) Calculate the maximum temperature range for Rebecca's finger.

(1)

answer .....°C

(ii) Compare the temperature of Rebecca's brain and her finger as the external temperature decreased.

(2)

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(iii) Explain why the temperature of Rebecca's finger showed this response to the decrease in the external temperature.

(3)

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*(b) Explain how the human body responds to an external temperature of 40 °C.

(6)

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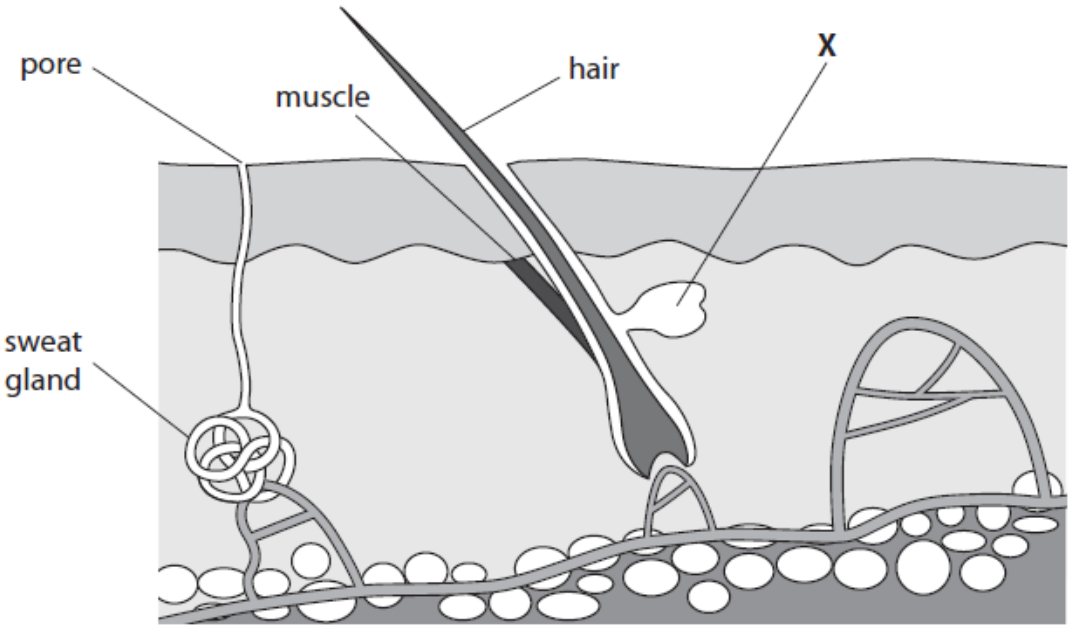
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(Total for Question = 12 marks)

Q2.

The skin

(a) The diagram shows a cross section through human skin.



(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

Structure **X** is the

(1)

☒ **A** blood capillary

☒ **B** dermis

☒ **C** nerve ending

☒ **D** sebaceous gland

(ii) Describe the role of the sweat gland in thermoregulation.

(2)

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(iii) Explain why the muscle attached to the hair follicle is important when a person starts to feel cold.

(2)

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(b) Thermoregulation is one way in which a constant internal environment is maintained.

What is the name given to the maintenance of a constant internal environment?

Place a cross (☒) in the box next to your answer.

(1)

☒ **A** homeostasis

☒ **B** hypothalamus

☒ **C** vasoconstriction

☒ **D** vasodilation

(c) Explain why the temperature of the human body needs to be maintained at 37 °C.

(2)

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(d) The photograph shows a reptile lying in sunlight.



Explain why reptiles lie in sunlight for long periods of time.

(2)

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(Total for question = 10 marks)

Q3.

Explain the role of glucagon in the body.

(3)

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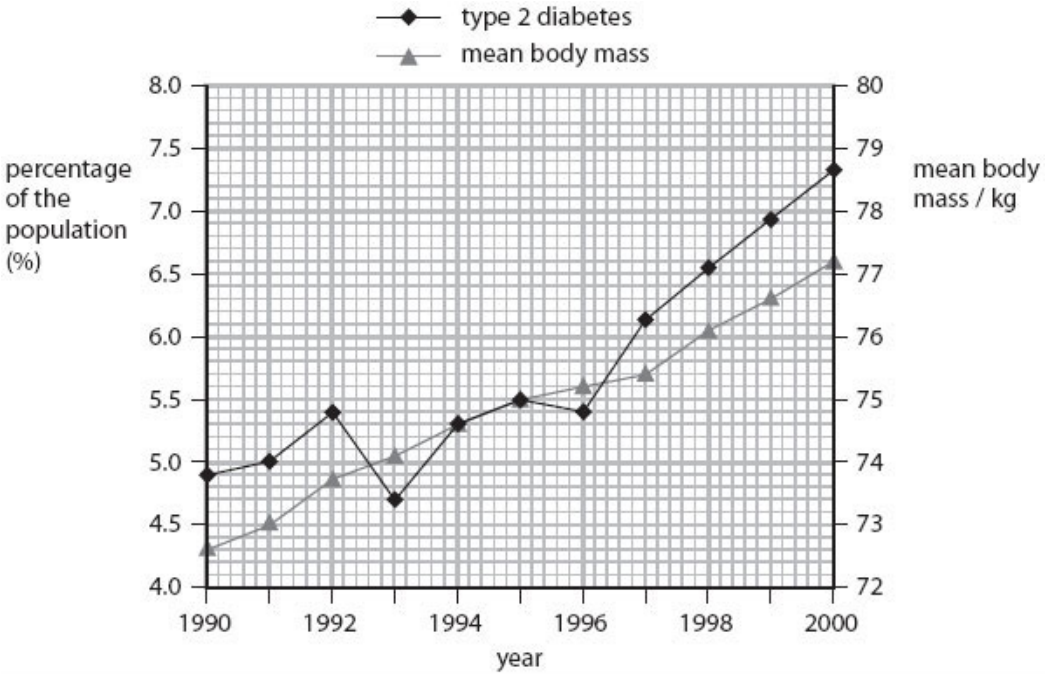
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(Total for question = 3 marks)

Q4.

The graph shows the percentage of the population with type 2 diabetes and the mean body mass of the population, from 1990 to 2000.



Describe how the human body acts in response to low glucose levels in the blood.

(3)

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Q5.

The combined contraceptive pill contains artificial versions of oestrogen and progesterone.

(i) Explain how the combined contraceptive pill prevents pregnancy.

(2)

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(ii) When taken correctly, the combined pill can be over 99% effective.

Taking the combined pill can lead to weight gain.

Give **one** other disadvantage of using the combined pill as the only method of contraception.

(1)

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(Total for question = 3 marks)

Q6.

The combined contraceptive pill contains the hormones oestrogen and progesterone.

(i) State the endocrine gland that releases oestrogen.

(1)

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(ii) Explain how high levels of oestrogen and progesterone in the combined contraceptive pill work together to prevent pregnancy.

(4)

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(Total for question = 5 marks)

Q7.

A student was investigating the effect of sweating.

The student set up two conical flasks each with a thermometer as shown in Figure 5.

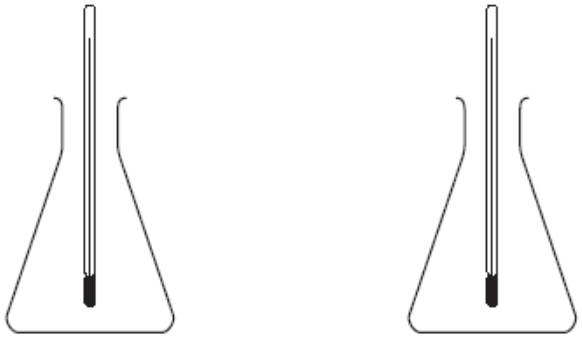


Figure 5

Flask 1 was covered in wet tissue paper.

Flask 2 was covered with dry tissue paper.

Hot water was added to each of the flasks.

The temperature of the water in each flask was recorded every minute for 10 minutes.

State **two** variables that would need to be controlled in this investigation.

(2)

1 .....

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2 .....

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(Total for question = 2 marks)

Q8.

Blood is filtered in the kidney to remove unwanted substances.

Figure 1 shows part of a nephron.

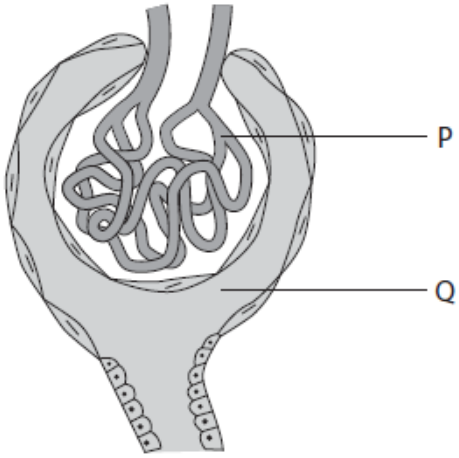


Figure 1

State the name of the hormone that regulates the water content of the blood.

(1)

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(Total for question = 1 mark)

Q9.

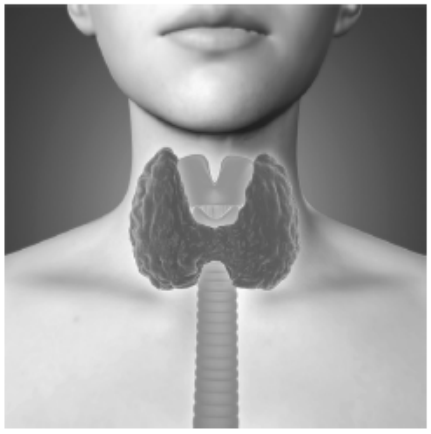
Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Hyperthyroidism is caused by an overactive thyroid gland.

Figure 14 shows a person with a normal thyroid gland and a person with hyperthyroidism.



normal



hyperthyroidism

© medistock/Shutterstock

Figure 14

(i) State **one** effect of hyperthyroidism on the thyroid gland.

(1)

.....

.....

(ii) The thyroid gland is part of the

(1)

☒ **A** circulatory system

☒ **B** digestive system

☒ **C** endocrine system

☒ **D** urinary system

(Total for question = 2 marks)

Q10.

Urine contains urea.

State how urea is formed in the human body.

(2)

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(Total for question = 2 marks)

Q11.

Water content is controlled within the human body.

State the name given to the control of water content in the body.

(1)

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Q12.

During ovulation an egg cell is released from the ovary.

Explain how changes in the levels of hormones result in ovulation.

(2)

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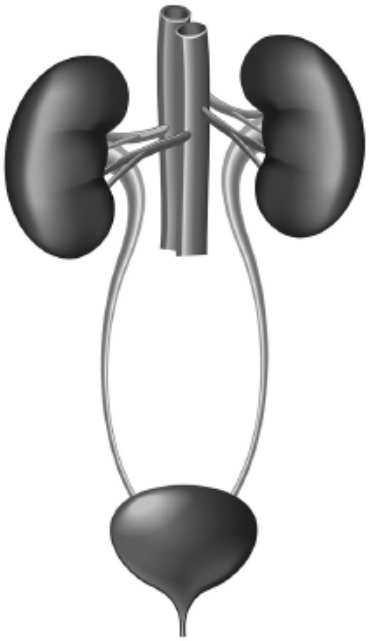
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Q13.

Figure 7 shows the human urinary system.



(Source: © La Gorda/Shutterstock)

Figure 7

Urine is made by removing water, urea and salts from the blood.

Use the letter X to label where urine is made.

(Total for question = 1 mark)

Q14.

(i) The volume of fluid filtered through the kidneys of a person in a day was 172 dm^3.

The volume of urine produced by that person in the same day was 1.4 dm^3.

Calculate the percentage of water reabsorbed into the body of that person for that day.

Give your answer to two decimal places.

(3)

..... %

(ii) A person drank the same volume of water on two consecutive days.

The second day was much hotter.

State how the volume of urine produced on the second day was different from the first day.

(1)

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(iii) Explain how water is reabsorbed from the collecting duct of the kidney.

(3)

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(Total for question = 7 marks)

Q15.

Infertility can be treated by increasing the chance of ovulation occurring.

Ovulation is controlled by hormones.

(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

The hormone that stimulates the maturation of follicles in the ovary is

(1)

☒ **A** FSH

☒ **B** LH

☒ **C** oestrogen

☒ **D** progesterone

(ii) Infertility treatments, including the use of hormones, can stimulate ovulation.

Explain **one** disadvantage of treating infertility by using hormones to stimulate ovulation.

(2)

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(iii) Complete the sentence by putting a cross (☒) in the box next to your answer.

Ovulation during pregnancy is prevented by high levels of

(1)

☒ **A** FSH

☒ **B** LH

☒ **C** insulin

☒ **D** progesterone

Q16.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Which substance is converted to urea in the liver?

(1)

☒ **A** amino acids

☒ **B** sugars

☒ **C** lipids

☒ **D** potassium ions

(Total for question = 1 mark)

Q17.

(i) Where in the human brain is the thermoregulatory centre?

(1)

☒ **A** cerebellum

☒ **B** cerebral cortex

☒ **C** hypothalamus

☒ **D** pituitary gland

(ii) Explain the role of vasodilation in thermoregulation.

(4)

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(Total for question = 5 marks)

Q18.

Which part of the brain controls internal body temperature?

(1)

☒

A cerebellum

☒ **B** medulla oblongata

☒ **C** hypothalamus

☒ **D** pituitary gland

(Total for question = 1 mark)

Q19.

(i) Women with the condition known as polycystic ovary syndrome (PCOS) do not ovulate regularly.

Women with PCOS can be treated using clomifene therapy.

Clomifene therapy stimulates the production of FSH.

Name the endocrine gland that produces FSH.

(1)

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(ii) During this therapy, a woman takes a clomifene tablet each day for the first five days of her menstrual cycle.

Describe the changes that would happen inside the ovaries during the first five days of this treatment.

(2)

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(iii) Which hormone causes ovulation?

(1)

☒ **A** LH

☒ **B** FSH

☒ **C** testosterone

☒ **D** progesterone

(iv) During clomifene therapy, the woman has a blood test on day 20 of the menstrual cycle.

The blood test shows a high level of progesterone.

Explain the cause of this high level of progesterone on day 20 of the menstrual cycle.

(2)

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(Total for question = 6 marks)

Q20.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Methods of contraception include use of hormones and barrier methods.

(i) Which form of contraception is a barrier method?

(1)

☒ **A** oral contraception

☒ **B** female condom

☒ **C** rhythm (calendar) method

☒ **D** contraceptive implant

(ii) State why a barrier method of contraception may be used in addition to a hormonal method.

(1)

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(Total for question = 2 marks)

- sweat rate increases