



Additional Assessment Materials
Summer 2021

Pearson Edexcel GCSE in Biology (1BI0)
Higher

Resource Set Topic 7: Animal coordination

Questions

(Public release version)

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General guidance to Additional Assessment Materials for use in 2021

Context

- Additional Assessment Materials are being produced for GCSE, AS and A levels (with the exception of Art and Design).
- The Additional Assessment Materials presented in this booklet are an **optional** part of the range of evidence teachers may use when deciding on a candidate's grade.
- 2021 Additional Assessment Materials have been drawn from previous examination materials, namely past papers.
- Additional Assessment Materials have come from past papers both published (those materials available publicly) and unpublished (those currently under padlock to our centres) presented in a different format to allow teachers to adapt them for use with candidate.

Purpose

- The purpose of this resource to provide qualification-specific sets/groups of questions covering the knowledge, skills and understanding relevant to this Pearson qualification.
- This document should be used in conjunction with the mapping guidance which will map content and/or skills covered within each set of questions.
- These materials are only intended to support the summer 2021 series.

1 Blood is filtered in the kidney to remove unwanted substances.

Figure 1 shows part of a nephron.

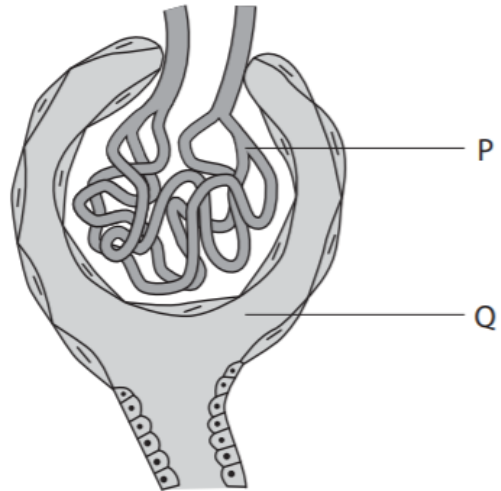


Figure 1

(a) Name the structures labelled P and Q.

(2)

P.....

Q.....

(c) State the name of the hormone that regulates the water content of the blood.

(1)

.....

6 (a) Iguanas are lizards.

Some species of iguana live on hot islands in the Pacific Ocean and use the environment to regulate their body temperature.

Figure 11 shows an iguana on a rock in the sunshine.



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Figure 11

A marine biologist measured the oxygen consumption of an iguana at different temperatures.

Figure 12 shows the results.

body temperature of the iguana in °C	oxygen consumption in cm ³ per gram per hour
20	0.4
25	0.8
30	1.1
35	1.4

Figure 12

(i) Describe how the body temperature of the iguana affects its oxygen consumption.

(1)

(ii) Explain why the body temperature of the iguana affects its oxygen consumption. (3)

(iii) Iguanas do not have sweat glands.

When an iguana is too hot, it pants by opening its mouth to cool down.

Explain how this behaviour helps to cool the iguana down.

(2)

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

(1)

- A** cerebellum
- B** cerebral cortex
- C** hypothalamus
- D** pituitary gland

(ii) Use information from Figure 17 to explain why women are less likely to menstruate after the age of 60.

(2)

(iii) Explain how clomifene therapy may increase the chance of a woman over the age of 50 becoming pregnant.

(2)

(iv) The hormone progesterone is produced by the

(1)

- A** corpus luteum
- B** pituitary
- C** thyroid
- D** uterus

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.

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

(2)

1.....

.....

2.....

.....

(b) The results of this investigation are shown in Figure 6.

time in minutes	flask 1 (wet tissue paper) temperature in °C	flask 2 (dry tissue paper) temperature in °C
1	98	98
2	82	91
3	71	84
4	60	76
5	50	69
6	39	61
7	31	56
8	22	49
9	22	42
10	22	37

Figure 6

(i) Calculate the rate of temperature change in flask 1 from 1 to 8 minutes. (2)

.....°C per minute

(ii) Compare the trends shown in the data for flask 1 and flask 2. (2)

.....

.....

.....

.....

(c) Explain how sweating helps to cool the body. (2)

.....

.....

.....

.....

.....

(d) Which part of the brain controls internal body temperature? (1)

- A cerebellum
- B medulla oblongata
- C hypothalamus
- D pituitary gland

(e) Explain why it is important to control the internal temperature of the human body.

(2)

6 (a) A person had symptoms including difficulty passing urine, aching in the lower abdomen, constant thirst and fainting.

A sample of their urine was tested.
The results are shown in Figure 8.

test	result	acceptable range
Glucose	200 mg per dl	0 to 130 mg per dl
Albumin (protein)	16 mg per dl	0 to 3 mg per dl
pH	3	5 to 7
Leukocytes (white blood cells)	40	2 to 5

Figure 8

(i) A doctor analysed the results and asked the person to have further tests for type 2 diabetes.

Give a reason why the doctor came to this conclusion.

(1)

(ii) Explain why the doctor also concluded that the person had a kidney infection.

(2)

(c) Describe the route taken by urine from the kidney until it leaves the body.

(3)

(d) Urine contains urea.

State how urea is formed in the human body.

(2)

7 (a) (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)

(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)

(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)

(b) Hormones are also used as a method of contraception.

Explain why taking high levels of oestrogen and progesterone in the combined contraceptive pill reduces the chance of pregnancy.

(2)

(c) The female population of Britain is 32.6 million.

The percentage of this population taking the combined contraceptive pill is 13.2%.

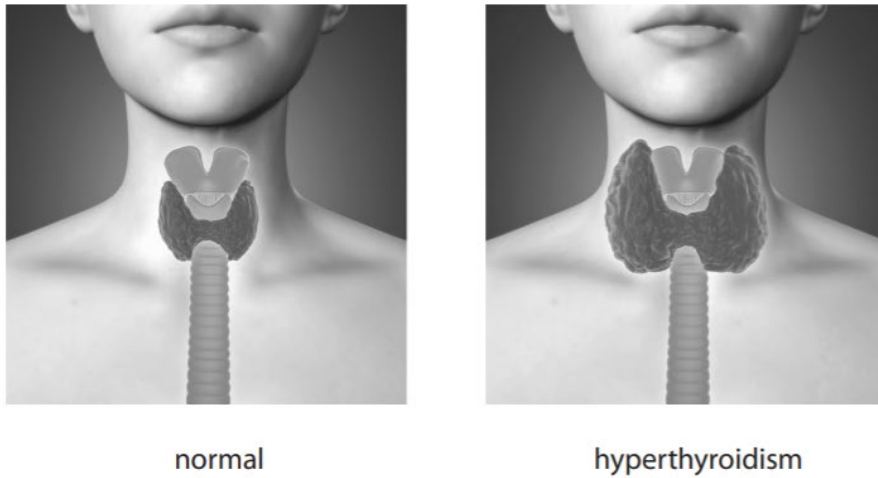
The combined pill is 98.8% effective.

Calculate the maximum number of females taking the combined contraceptive pill who could become pregnant.

(3)

- 9 (a) Hyperthyroidism is caused by an overactive thyroid gland.

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



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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

