Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

BIOLOGY **0610/33**

Paper 3 Theory (Core) **October/November 2018**

1 hour 15 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **18** printed pages and **2** blank pages.

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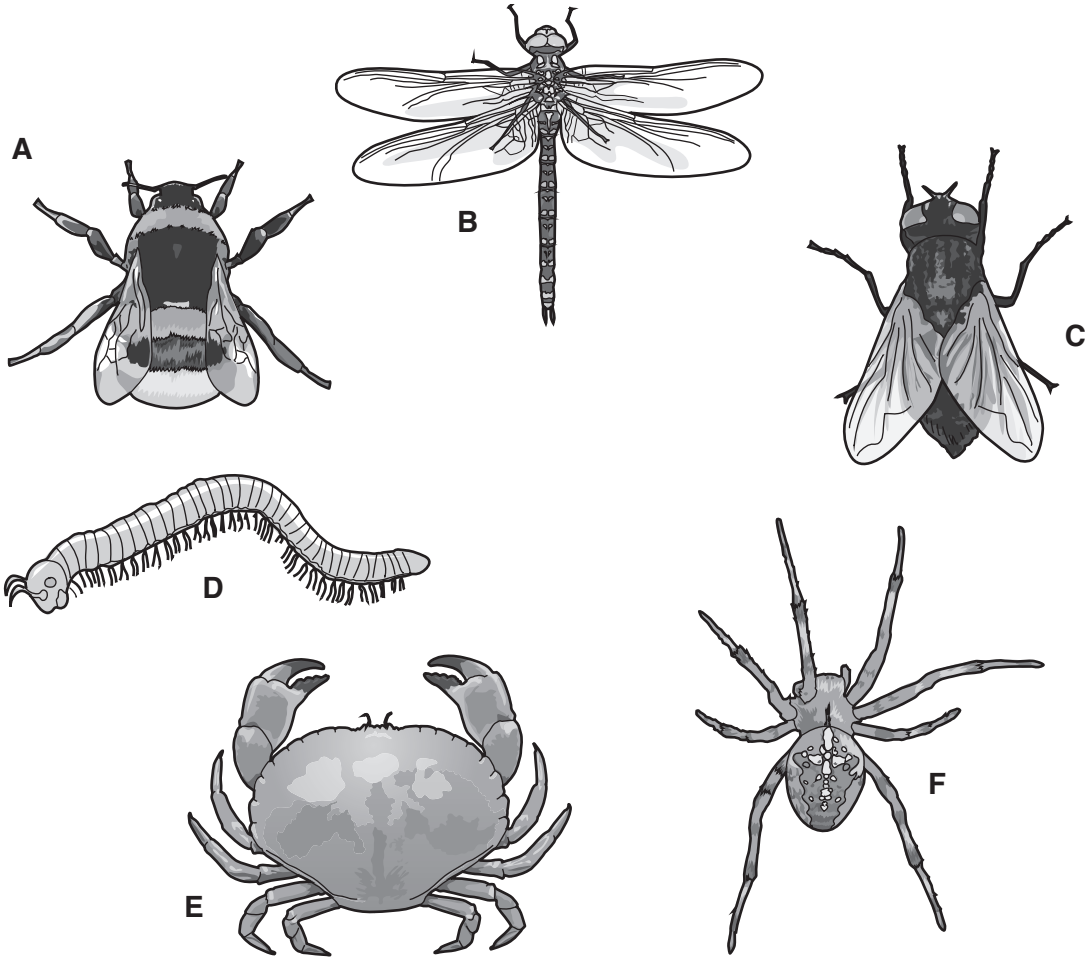
1 Fig. 1.1 shows six different arthropods labelled **A**, **B**, **C**, **D**, **E** and **F**.



not to scale

Fig. 1.1

(a) State **one** feature that can be used to classify an animal as an arthropod.

View solution

.....[1]

(b) **(i)** State **one** visible feature that arthropods **A**, **B** and **C** have that arthropods **D**, **E** and **F** do **not** have.

.....

.....[1]

(ii) State the letter of the organism in Fig. 1.1 that is a crustacean.

View solution

Give a reason for your answer.

letter .....

reason .....

.....

[2]

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(c) One of the drawings shows an arthropod named *Araneus diadematus*.

View solution

This arthropod has a body in two segments and it has eight legs.

(i) State the letter of the organism in Fig. 1.1 that shows *Araneus diadematus*.

..... [1]

(ii) State the name of the group of arthropods that includes *Araneus diadematus*.

.....[1]

[Total: 6]

View solution

2 **(a)** Arrange the structures in the list in increasing order of organisation, starting with the smallest structure.

View solution

cell **organism** **organ**

organ system **tissue**

The first one has been done for you.

cell

↓

.....

↓

.....

↓

.....

↓

.....

[3]

(b) The boxes on the left show different parts of a flowering plant.

The boxes on the right are terms that describe different levels of organisation.

View solution

Draw **one** straight line from each part of a flowering plant to the correct level of organisation.

part of a flowering plant	level of organisation
flower	cell
flowering plant	organ
palisade mesophyll	organism
root hair	organ system
	tissue

[4]

[Total: 7]

3 Fig. 3.1 shows a food chain that is found in the sea.



not to scale

Fig. 3.1

(a) (i) State the name of the producer in this food chain.

View solution

.....[1]

(ii) Define the term *producer*.

View solution

.....

.....

.....[2]

(iii) State the name of the secondary consumer in this food chain.

View solution

.....[1]

(iv) State the name of the herbivore in this food chain.

View solution

.....[1]

(v) State what the arrows in a food chain represent.

View solution

.....

.....

.....[1]

(b) In some countries humans eat crabs.

Explain how the over-harvesting of crabs could affect the other organisms in the food chain shown in Fig. 3.1.

.....

.....

.....

.....

.....

.....

.....[3]

[Total: 9]

View solution

4 Fig. 4.1 shows a photograph of an area where the trees have been cut down.



Fig. 4.1

(a) (i) State the name of the type of habitat destruction shown in Fig. 4.1.

View solution

.....[1]

(ii) List **three** undesirable effects of habitat destruction.

View solution

1 .....

2 .....

3 .....

[3]

(b) State **three** human activities, other than cutting down large areas of trees, that can cause habitat destruction.

1 .....

2 .....

3 .....

[3]

View solution

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(c) Describe how endangered species can be conserved.

View solution

.....

.....

.....

.....

.....

.....

.....[3]

(d) Human activity can cause pollution of the environment.

View solution

Table 4.1 shows some pollutants, the environment they pollute and some of the effects.

Complete Table 4.1.

Table 4.1

pollutant	environment	effect of pollutant on the environment
methane	air	
herbicides		kills non-targeted plants
	water	increased growth of water plants

[3]

[Total: 13]

5 **(a)** Coat colour in horses is controlled by genes.

View solution

The allele for black coat (**E**) is dominant.

The allele for red coat (**e**) is recessive.

Place ticks (✓) in the table to show the coat colours of horses with each of the following genotypes.

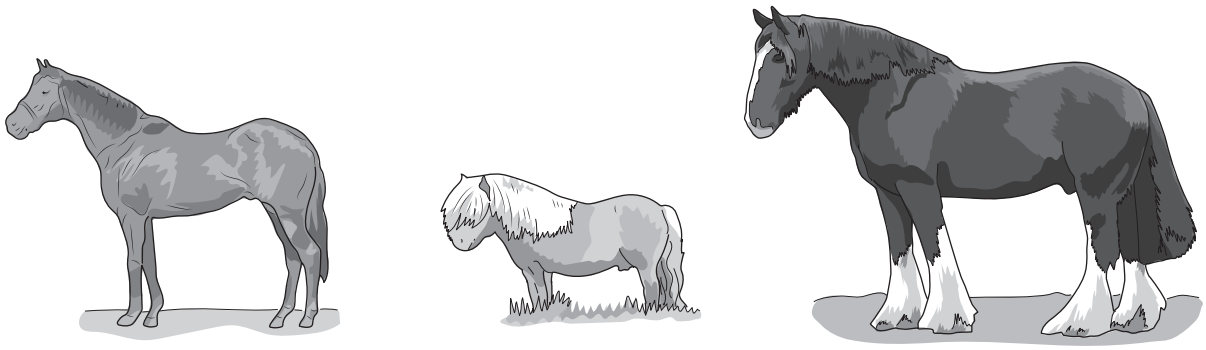
genotype	black coat	red coat
EE		
Ee		
ee		

[2]

(b) Modern horse breeds look very different to each other, but still belong to the same species.

View solution

Fig. 5.1 shows three different horse breeds.



Thoroughbred Shetland Shire

Fig. 5.1

State the term used to describe the difference between individuals of the same species.

.....[1]

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(c) Shire horses have been produced by selective breeding. They are strong and can pull heavy loads.

Describe the process of selective breeding.

View solution

.....

.....

.....

.....

.....

.....

.....[3]

(d) Describe how natural selection differs from selective breeding.

View solution

.....

.....

.....

.....

.....

[2]

[Total: 8]

6 A factory uses biotechnology to process apples.

Some of the apple juice is mixed with yeast and used to make ethanol.

View solution

(a) **(i)** State the type of respiration in yeast that produces ethanol.

.....[1]

(ii) State the name of the substance in apple juice that is converted to ethanol by yeast.

.....[1]

View solution

(b) The yeast uses enzymes to produce ethanol.

(i) Define the term *enzyme*.

.....

.....[2]

Fig. 6.1 shows apparatus used to find the best (optimum) temperature for making ethanol.

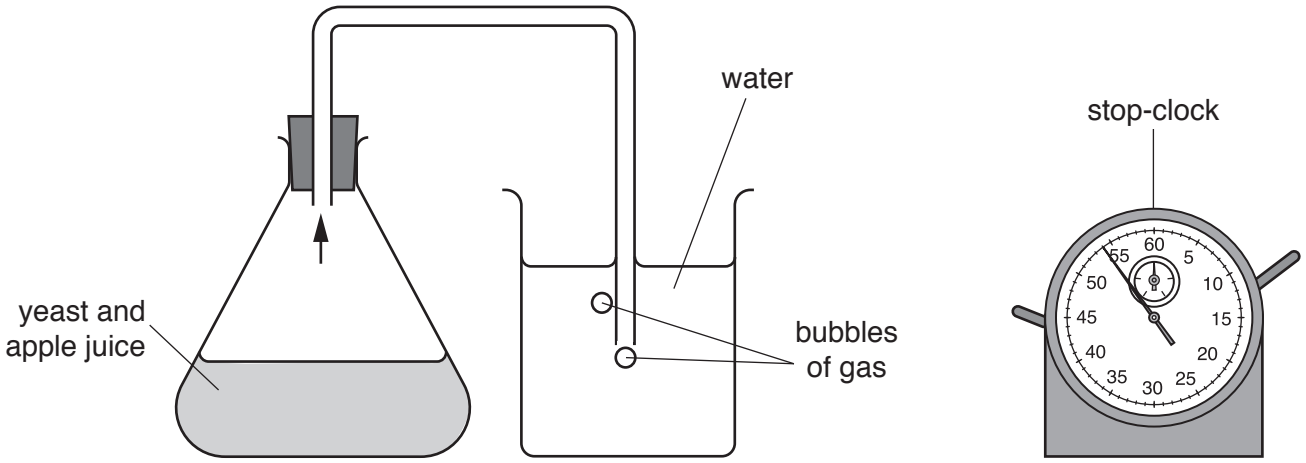

Fig. 6.1

The same apparatus was used at different temperatures.

The rate of ethanol production was compared by counting the number of bubbles of gas produced by the yeast and apple juice mixture per minute.

(ii) State the name of the gas produced by the yeast in Fig. 6.1.

.....[1]

View solution

The results of the investigation are shown in Fig. 6.2.

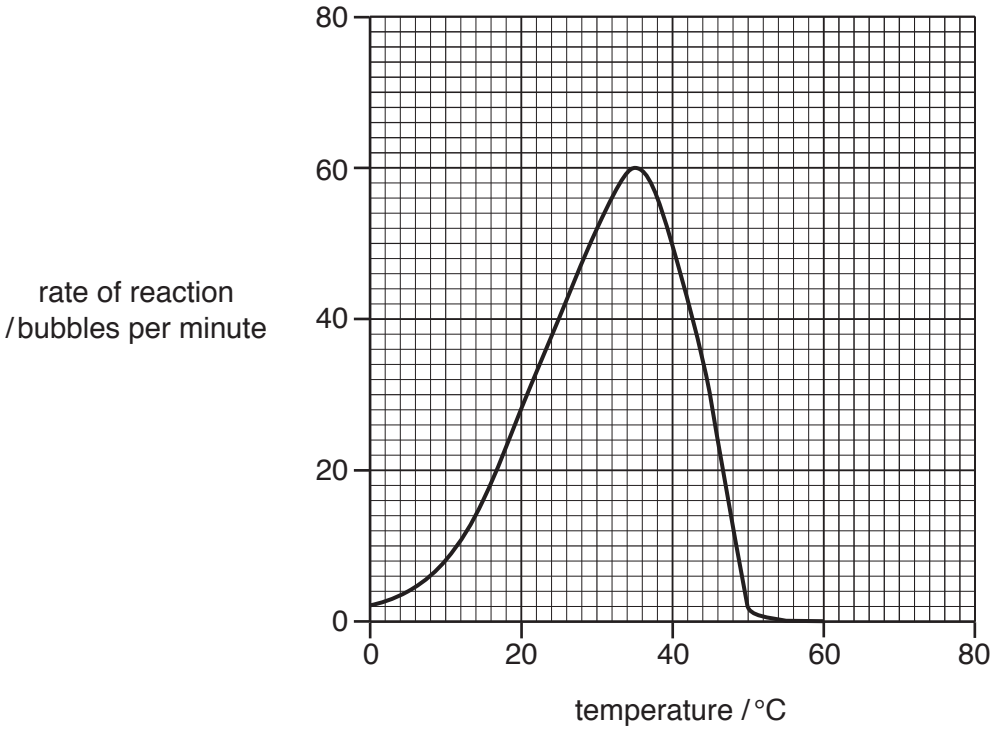

Fig. 6.2

(iii) Calculate the increase in the rate of reaction from 20 °C to 25 °C in Fig. 6.2.

View solution

Space for working.

..... bubbles per minute [1]

(iv) State the optimum temperature for the reaction shown in Fig. 6.2.

..... °C [1]

View solution

(c) The cut surface of an apple usually turns brown when exposed to air. This is caused by enzymes.

Three slices of apple were given different treatments and were then exposed to air for 30 minutes.

View solution

Table 6.1 shows the treatments and appearance of the apple slices.

Table 6.1

apple slice	pH	temperature / °C	appearance of the apple slice at 0 minutes	appearance of the apple slice after 30 minutes
A	6	20	white	brown
B	2	20	white	white
C	6	4	white	white

Suggest why slice **B** and slice **C** did not turn brown after 30 minutes.

slice **B** .....

.....

slice **C** .....

.....

[2]

(d) The enzyme pectinase is used in industry for the production of apple juice.

View solution

Explain why pectinase is used when making apple juice.

.....

.....

.....

.....

.....

.....

.....[3]

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(e) Hygienic conditions are required in an apple juice factory.

Describe **three** precautions workers should take to ensure that good food hygiene is maintained in the apple juice factory.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 15]

View solution

7 **(a)** **(i)** State **one** type of blood cell that is involved in the defence against disease.

.....[1]

(ii) State **two** ways blood cells defend the body against disease.

View solution

1 .....

2 .....

[2]

(b) **(i)** HIV is a sexually transmitted infection (STI).

View solution

Define the term *sexually transmitted infection*.

.....

.....

.....[2]

(ii) State why antibiotics cannot be used to treat HIV infections.

View solution

.....

.....

.....[2]

(iii) Explain how the spread of STIs can be controlled.

View solution

.....

.....

.....

.....

.....

.....

.....

[3]

[Total: 10]

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8 **(a)** Fig. 8.1 shows some parts of the human body.

View solution

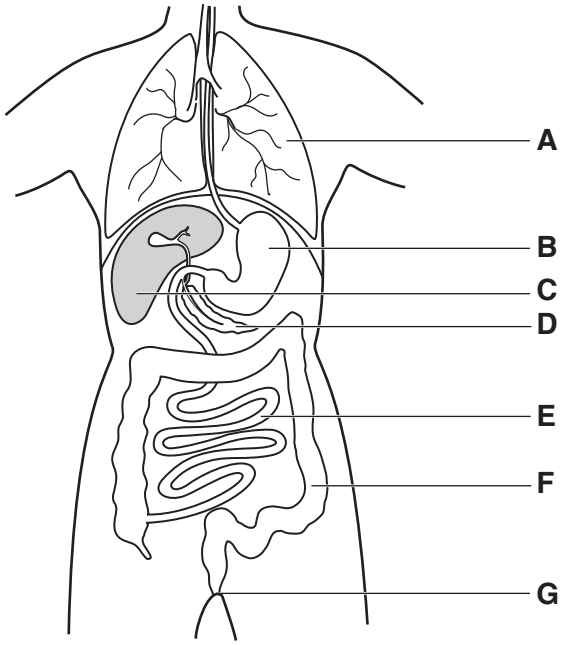

Fig. 8.1

(i) Use Fig. 8.1 to complete Table 8.1.

State the letter and the name of the part responsible for each function.

Table 8.1

function	letter in Fig. 8.1	name of the part
produces insulin		
produces hydrochloric acid		
produces urea		

[6]

(ii) State the letter of the part of the body where egestion occurs.

View solution

.....[1]

(iii) State the function of hydrochloric acid in the body.

.....[1]

View solution

(b) Complete the sentences using words from the list.

View solution

amino acids **anus** **bladder** **fatty acids** **glucose**

rectum **uterus** **ureter** **urethra**

You may use the words once, more than once or not at all.

Urea is a waste product made from the breakdown of excess ..... .

Urea passes through the kidney and forms part of the urine.

Urine leaves the kidney in the ..... . This tube takes the urine to the ..... where the urine is stored until it leaves the body. It leaves the body through the ..... .

[4]

[Total: 12]

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