

Biological Molecules

Question Paper 2

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Biological Molecules
Sub-Topic	
Paper Type	Alternative to Practical
Booklet	Question Paper 2

Time Allowed: 59 minutes

Score: /49

Percentage: /100

1 Fig. 2.1 shows a honey bee, *Apis mellifera*.



Fig. 2.1

(a) Make a labelled drawing of the back leg of the honey bee shown in Fig. 2.1.

Honey bees are important in pollination when they gather nectar from flowers.
The nectar is used for making honey.
Honey contains pollen grains which identify the flowers that the nectar was gathered from.

Fig. 2.2 shows some pollen grains in a sample of honey as seen with a microscope.

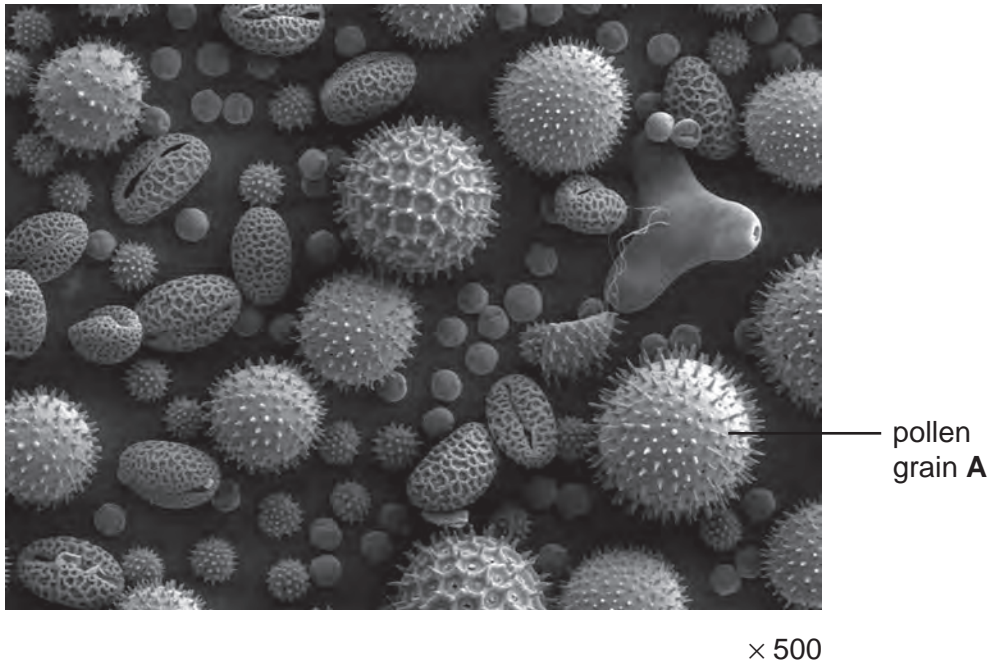


Fig. 2.2

(b) (i) Measure the diameter of pollen grain **A**. Draw a line on Fig. 2.2 to show where you have made your measurement.

diameter of pollen grain **A** in Fig. 2.2 mm [1]

(ii) Calculate the actual diameter of pollen grain **A**. Show your working.

actual diameter of pollen grain **A** mm [2]

(c) Describe how you could safely test a sample of honey for starch and reducing sugar:

.....
.....
.....
.....
..... [4]

Honey production has been affected by parasites found on both the adult and larval stages of honey bees.

One of the latest pests has been identified as a blood sucking parasite, *Varroa destructor*.

Fig. 2.3 shows the external appearance of this parasite.



× 60

Fig. 2.3

(d) (i) *Varroa* is a parasite. Using the information above, suggest the meaning of the term parasite.

.....

.....

..... [2]

(ii) Name the arthropod groups to which the honey bee, *Apis mellifera*, and the parasite, *Varroa destructor*, belong. For each organism, give one feature which leads to your identification.

organism	arthropod group	feature
honey bee (<i>Apis mellifera</i>)
parasite (<i>Varroa destructor</i>)

[4]

[Total : 18]

- 2 Fig.1.1a shows a whole garlic bulb and Fig.1.1b shows a section with many 'cloves' arranged around a central stem.



Fig.1.1a

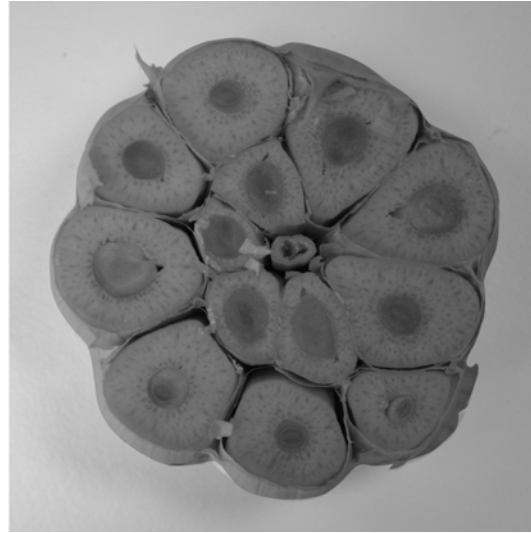


Fig.1.1b

- Fig. 1.2a shows a whole potato and Fig. 1.2b shows a section of the potato stem tuber.



Fig.1.2a



Fig.1.2b

(a) Make a large, labelled drawing of Fig. 1.1b. to show the section of the garlic bulb.

[5]

(b) (i) Compare **one** visible similarity between the garlic bulb and the potato tuber.

.....
.....

[1]

(ii) Describe **two** visible differences between the garlic bulb and the potato tuber.

.....
.....
.....
.....

[2]

- (c) Describe how you would carry out tests on the garlic and the potato to compare the starch content and the reducing sugar content. Include any necessary safety precautions.

starch

.....

.....

.....

reducing sugar

.....

.....

.....

..... [6]

[Total: 14]

3 Fig. 2.1 shows a tomato and Fig. 2.2 shows an apple, both are cut in half longitudinally through the middle.



Fig. 2.1



Fig. 2.2

(a) Make a large, labelled drawing of the cut surface of the tomato fruit shown in Fig. 2.1.

(b) (i) Complete Table 2.1 to show four **differences** between the two fruits visible in Fig. 2.1 and Fig. 2.2.

Table 2.1

	tomato	apple
1		
2		
3		
4		

[4]

(ii) Describe two **similarities** between the two fruits visible in Fig. 2.1 and in Fig. 2.2.

1.
2. [2]

(c) Describe an investigation you could carry out to compare the reducing sugar content of these two fruits.

Include any safety precautions you will need to consider.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [6]

[Total: 17]