

A Level Biology A
H420/01 Biological Processes

Question Set 11

11 (a)

Honey-pot ants belong to several different genera. Some specialised individuals are used as food storage vessels. These individuals have swollen abdomens that store various foods, which can be given to members of the colony when required.

One such individual is shown in Fig. 19.1.



Fig. 19.1

An investigation was carried out into the respiratory substrate of three different genera of honey-pot ant, by measuring oxygen uptake and carbon dioxide production.

The data are shown in Table 19.1.

Genus	CO ₂ produced(mm ³ s ⁻¹)	O ₂ consumed(mm ³ s ⁻¹)
<i>Camponotus</i>	0.89	0.88
<i>Melophorus</i>	0.59	0.66
<i>Cataglyphis</i>	1.01	1.47

Table 19.1

Use the data in Table 19.1 to suggest the likely diet of each genus of honey-pot ant.

Justify your answer.

Genus	Diet	Justification
<i>Camponotus</i>	mainly carbohydrate	
<i>Melophorus</i>		
<i>Cataglyphis</i>		

[3]

- 11 (b) Chitin is a polysaccharide found in insects. It is used to form the hard outer casing of their bodies.

Fig. 19.2 shows the chemical structure of chitin.

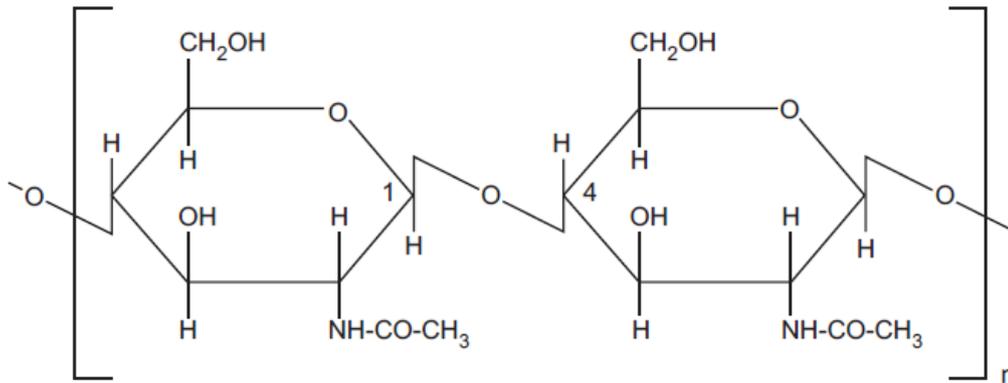


Fig. 19.2

Using information from Fig. 19.2, state **two** similarities and **two** differences between the structures of chitin and glycogen.

Similarity 1

.....

Similarity 2

.....

Difference 1

.....

Difference 2

.....

[4]

- 11 (c) Insects use glucose to generate ATP.

Outline the processes involved in the generation of ATP through **chemiosmosis**.

[6]

Total Marks for Question Set 11: 13

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