

**AS Level Biology B**  
**H022/01** Foundations of biology

**Question Set 8**

1 Water is an important biological molecule.

(a) The table below shows some of the properties of water and their importance to living organisms.

Complete the table using the most appropriate term(s) or sentence(s).

Property of water	Importance to living organisms
..... .....	allows chemical reactions to take place inside cells
has a high latent heat of vaporisation	..... .....
..... .....	allows a continuous column of water to move through xylem vessels without breaking
has a high specific heat capacity	..... .....

[4]

- (b) Water also plays an important role in the reactions involved in the formation and breakdown of macromolecules in the human body.

Fig. 1.1 shows the formation and breakdown of one type of macromolecule.

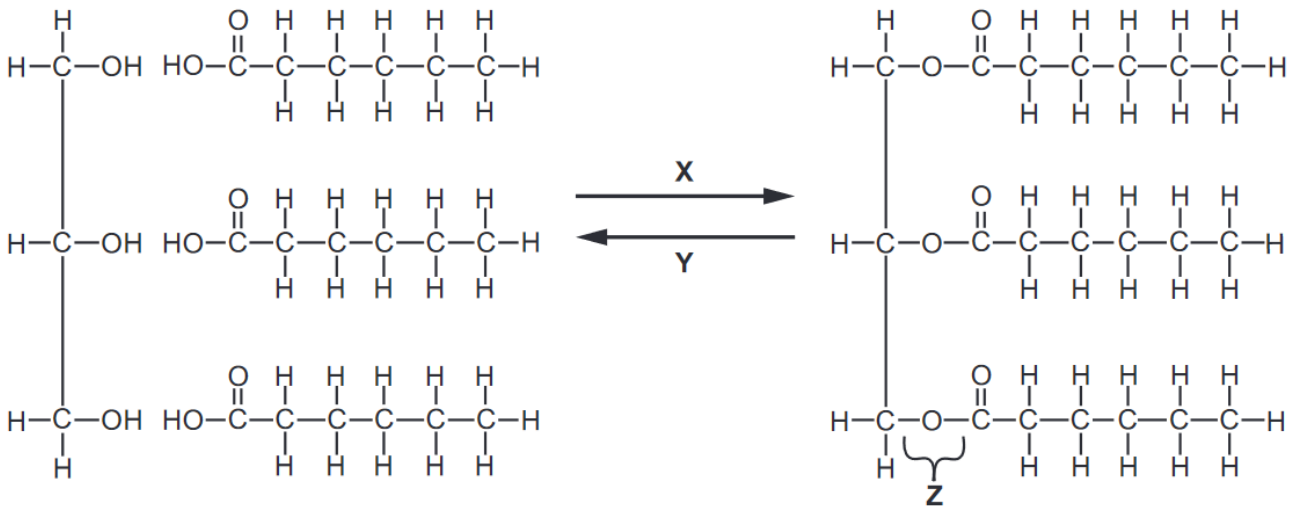


Fig. 1.1

- (i) Name the types of reaction taking place at X and Y.

Reaction X .....

Reaction Y .....

[1]

- (ii) Name **both** products of reaction X.

[1]

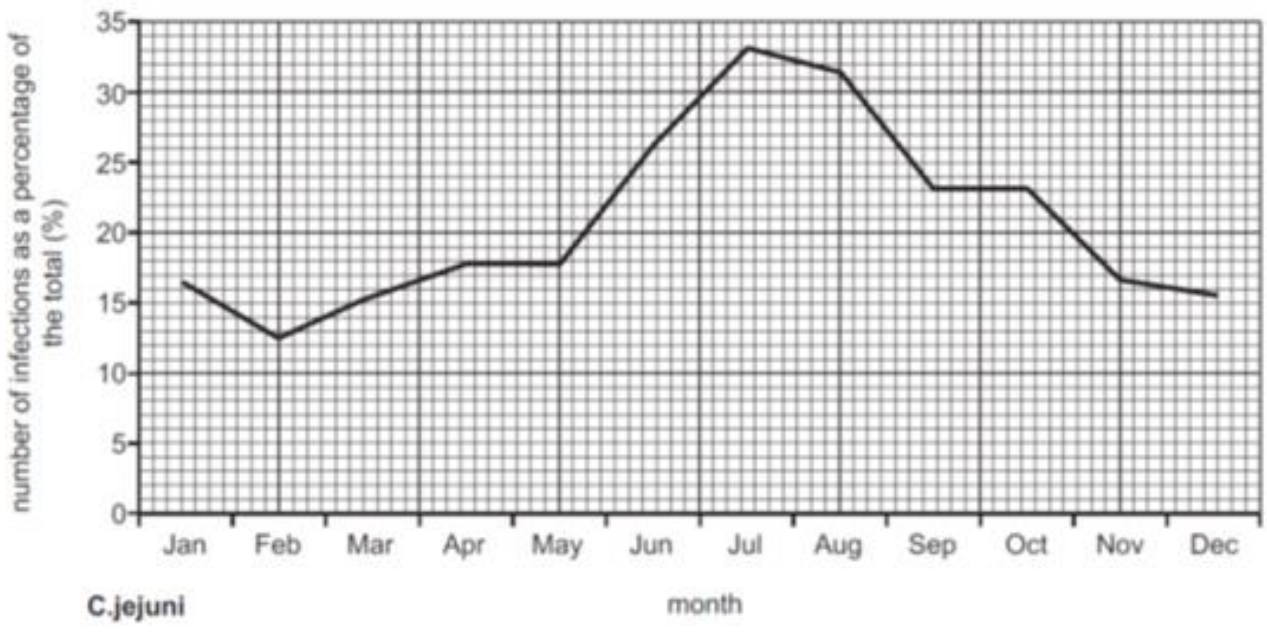
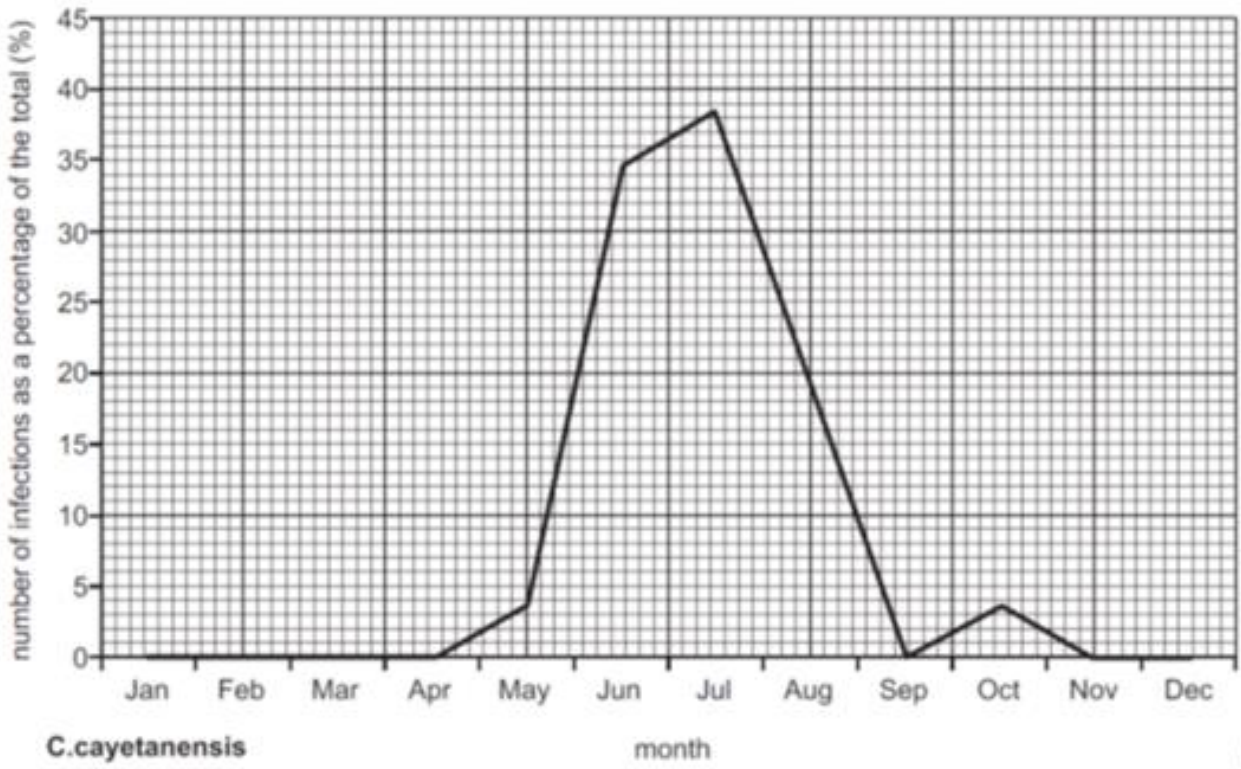
- (iii) Name the bond labelled Z.

[1]

- (c) It is essential to the functioning of the human body to maintain the correct balance of water and dissolved nutrients.

*Cyclospora cayetanensis* and *Campylobacter jejuni* are microorganisms that cause diarrhoea in humans leading to excessive water loss.

Fig. 1.2 shows some of the data recorded for infections caused by these microorganisms in a human population during the year 2014.



**Fig 1.2**

(i) Comment on the trends shown by the data in Fig. 1.2 for the infection caused by *C.jejuni*. [2]

(ii) The data for the infection caused by *C.cayetanensis* suggests that an epidemic occurred between the months of May and August.

Comment on the validity of this suggestion. [2]

(d) Fig. 1.3 is a transmission electron micrograph (TEM) of a *C.jejuni* bacterium.

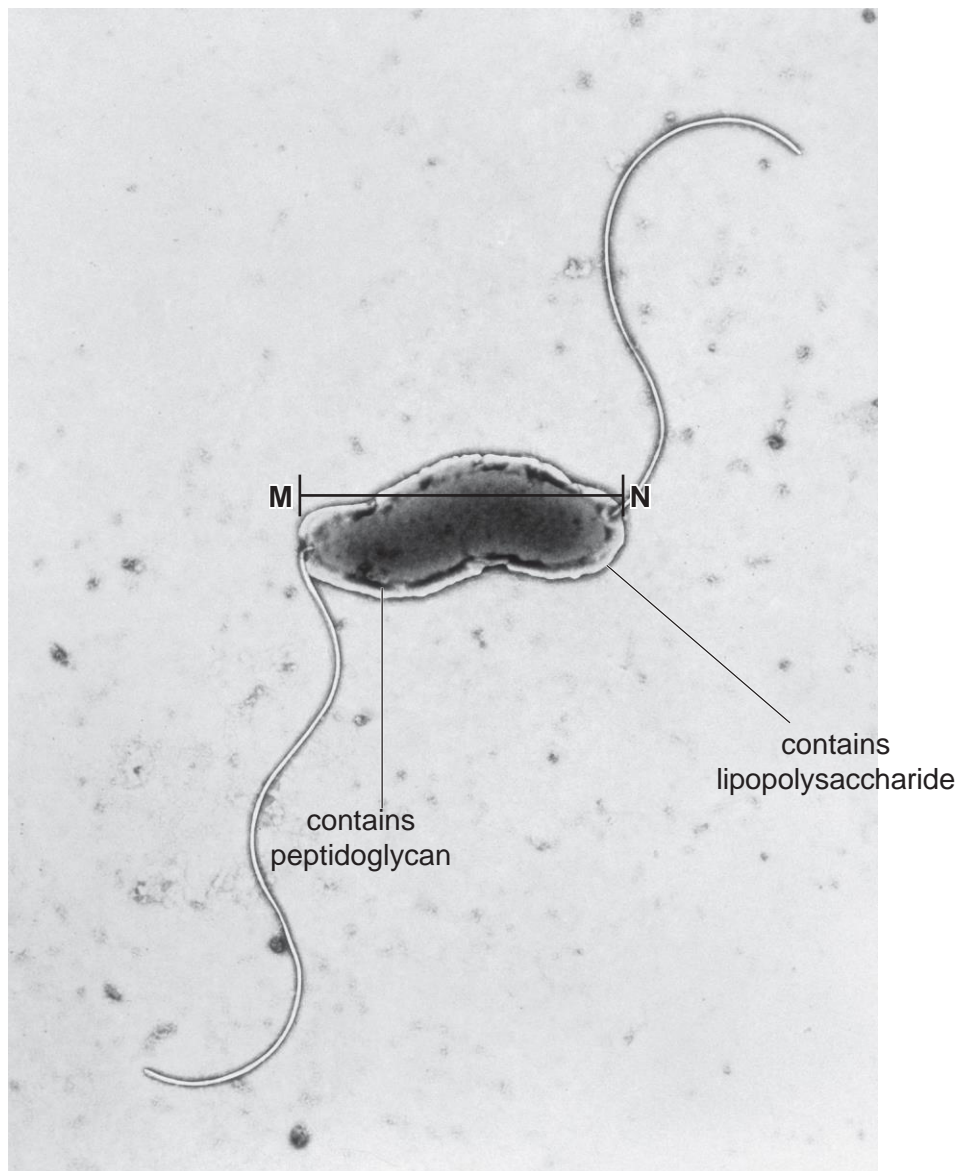


Fig. 1.3

(i) The actual length of the bacterium shown in Fig. 1.3 between points **M** and **N** is 4  $\mu\text{m}$ .

Calculate the magnification of the micrograph.  
Give your answer to **three** significant figures.

Answer = ..... [2]

- (ii) Using the information in Fig. 1.3 comment on **and** explain the results that would be obtained following Gram staining of a culture of *C.jejuni*.

[3]

**Total Marks for Questions Set 8: 16**



Oxford Cambridge and RSA

**Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge