

6 Carl Woese suggested that living organisms could be grouped into three domains.

(a) The Eukarya domain includes the plant kingdom.

Plants are different from other groups of organisms in the Eukarya domain as they have cellulose cell walls. The cellulose molecules in the cell wall are arranged in microfibrils.

The table below gives four features of a cellulose molecule and a cellulose microfibril.

If the feature is present place a tick (✓) in the box and if it is absent, place a cross (✗) in the box.

(4)

Feature	Cellulose molecule	Cellulose microfibril
Alpha ( $\alpha$ ) glucose		
1,4-glycosidic bonds		
1,6-glycosidic bonds		
Hydrogen bonds		

(b) Eukarya is one of the three domains.

Name the other **two** domains.

(2)

1. ....

2. ....

(c) Scientists classify organisms into taxonomic groups, such as the three domains.

Explain how organisms can be classified into taxonomic groups.

(2)

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(d) When Carl Woese first suggested that all organisms could be classified into one of the three domains, his ideas were not accepted.

Suggest how Woese's idea was critically evaluated.

(3)

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**(Total for Question 6 = 11 marks)**

