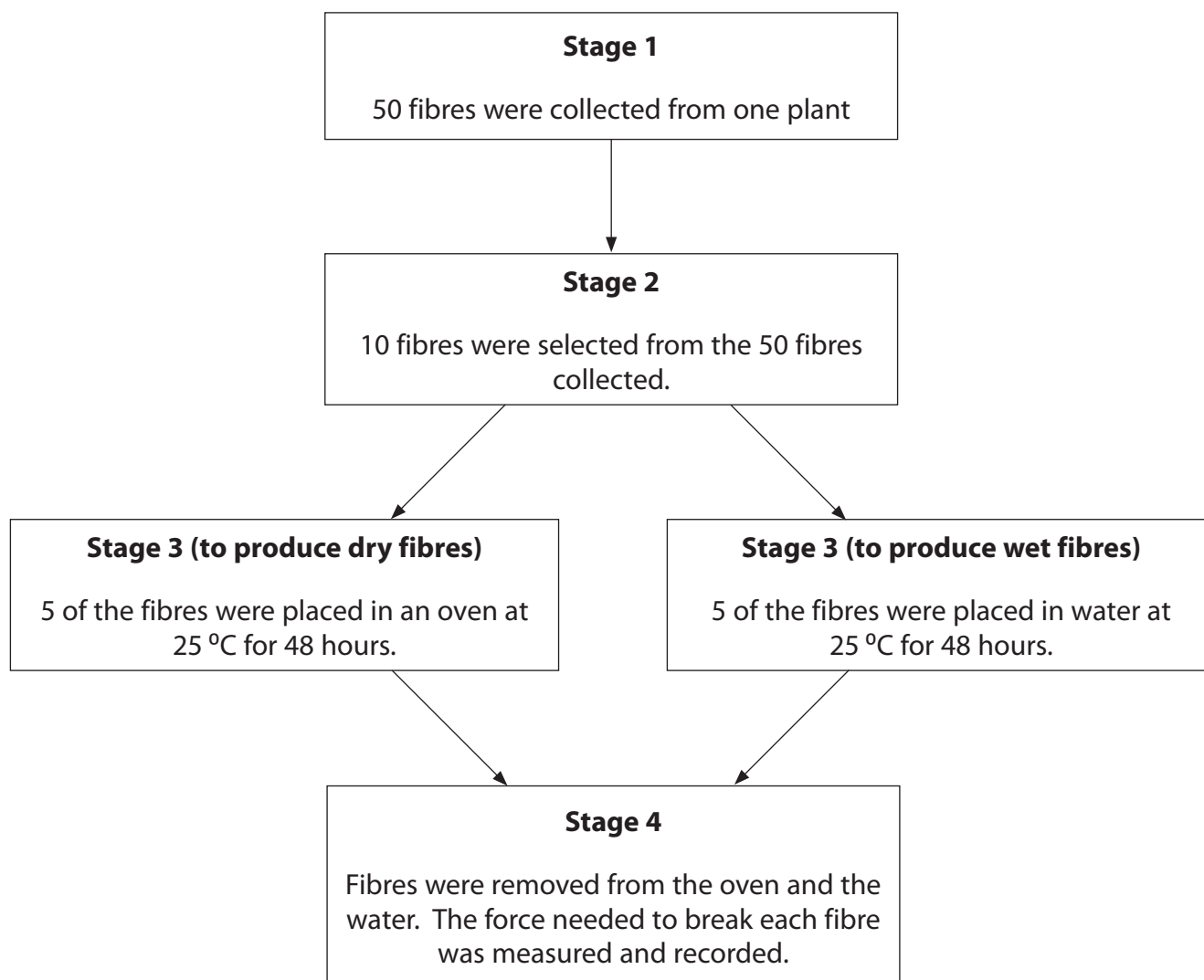


- 3 An investigation was carried out to measure the force needed to break wet and dry plant fibres.

The diagram below shows some of the stages involved in this investigation.



- (a) (i) Explain why the fibres were collected from only one plant in stage 1.

(1)



- (ii) Suggest **two** factors that should be kept constant when selecting the 10 fibres from the 50 in stage 2.

(2)

1 .....

2 .....

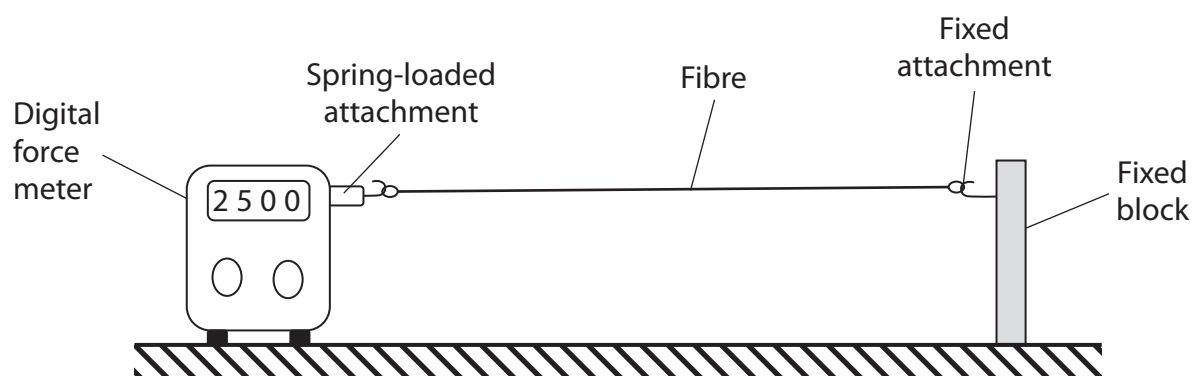
- (iii) Suggest why all fibres were kept at the same temperature in stage 3.

(1)

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- (b) The diagram below shows the equipment used in stage 4 to find the force needed to break each fibre.



Suggest why safety glasses should be worn when using the apparatus shown in the diagram.

(1)

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(c) The table below shows the results of this investigation.

Sample	Force needed to break each fibre / arbitrary units	
	Wet	Dry
1	4200	2800
2	3800	2900
3	4100	2600
4	4100	2700
5	3100	2800
Mean	3860	2760

- (i) Compare the mean force needed to break the wet fibres with the mean force needed to break the dry fibres.

(2)

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- (ii) State which of these two sets of data is less reliable. Give reasons for your answer.

(3)

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(d) A student observed that dry fibres 3, 4 and 5 each had a knot in the middle of their length and that they broke at the knot. She used this observation to state that the recorded force needed to break these three dry fibres was an underestimate.

(i) Suggest **one** piece of evidence from the table that supports her statement.

(1)

(ii) Suggest **one** piece of evidence from the table that does **not** support her statement.

(1)

(Total for Question 3 = 12 marks)

