

Biology B

Advanced

PAPER 3: General and Practical Principles in Biology

Wednesday 18 June 2025 – Morning

Time: 2 hours 30 minutes

Diagram Booklet

THIS DOCUMENT MUST BE RETURNED TO
PEARSON AT THE END OF THE EXAMINATION

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

INSTRUCTIONS

There may be spare copies of some diagrams.

CONTENTS

4	Question 1
5	Question 2(a)
6	Question 3(a) – Graph
7	Question 3(a) – Diagram
8	Question 3(b)
9	Question 4(a)(iii)
10	Question 4(b)
11	Question 4(b)(i) – Blank page
12	Question 4(b)(ii) – Blank page
13	Question 5(a)
14	Question 5(b)
15	Question 6(a) – Image
16	Question 6(a) – Diagram
17	Question 6(a) – Table
18	Question 7(a)

(continued on the next page)

Turn over

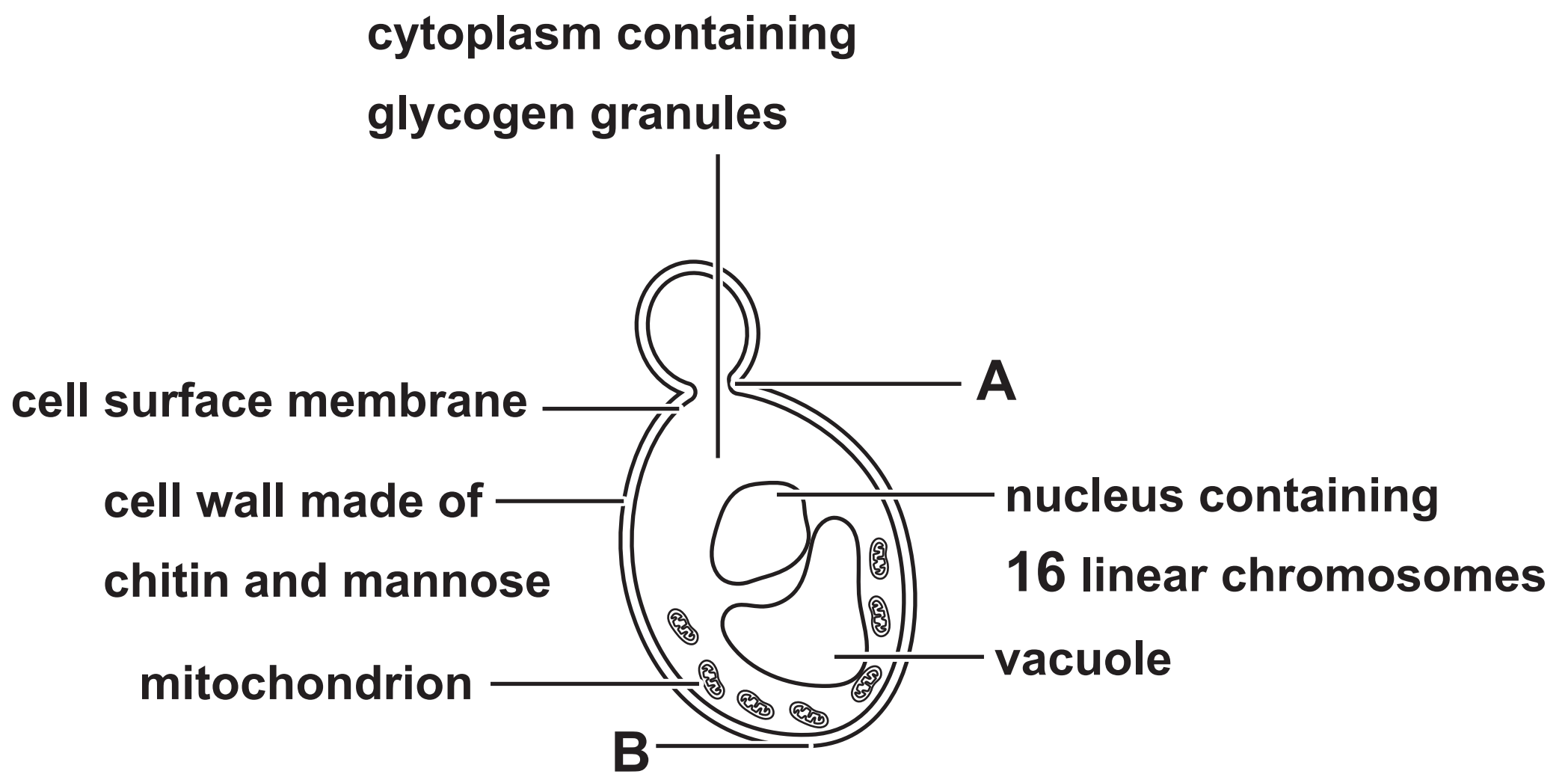
CONTENTS continued.

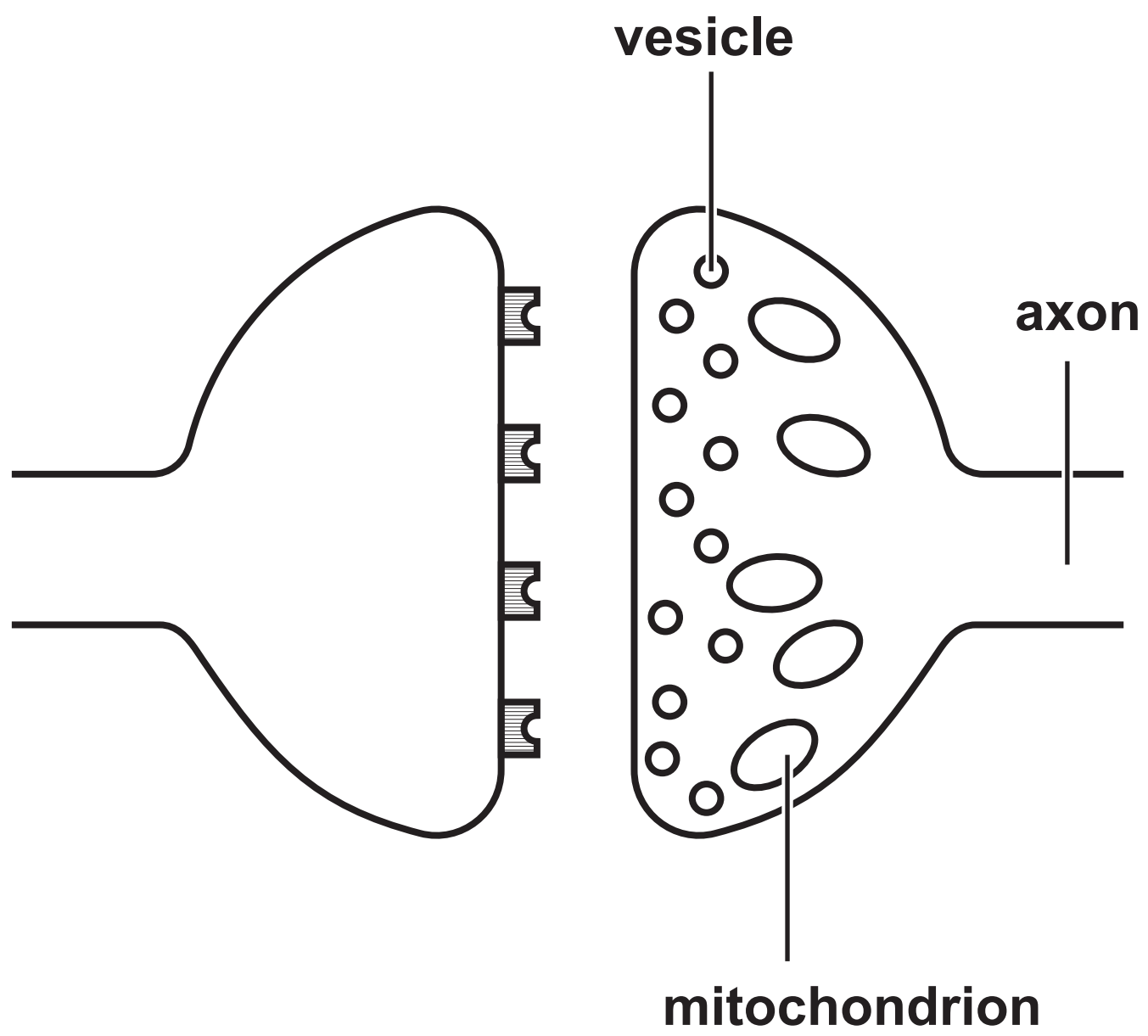
19	Question 7(b)
20	Question 8
21	Question 8(a)(ii)
22	Question 8(a)(iii)
23	Question 9(b)
24	Question 9(c)
25	Question 9(d) – Diagram 1
26	Question 9(d) – Diagram 2
27	Question 10(b)
28	Question 11(a) – Diagram
29	Question 11(a) – Table
30	Question 11(a)(ii)

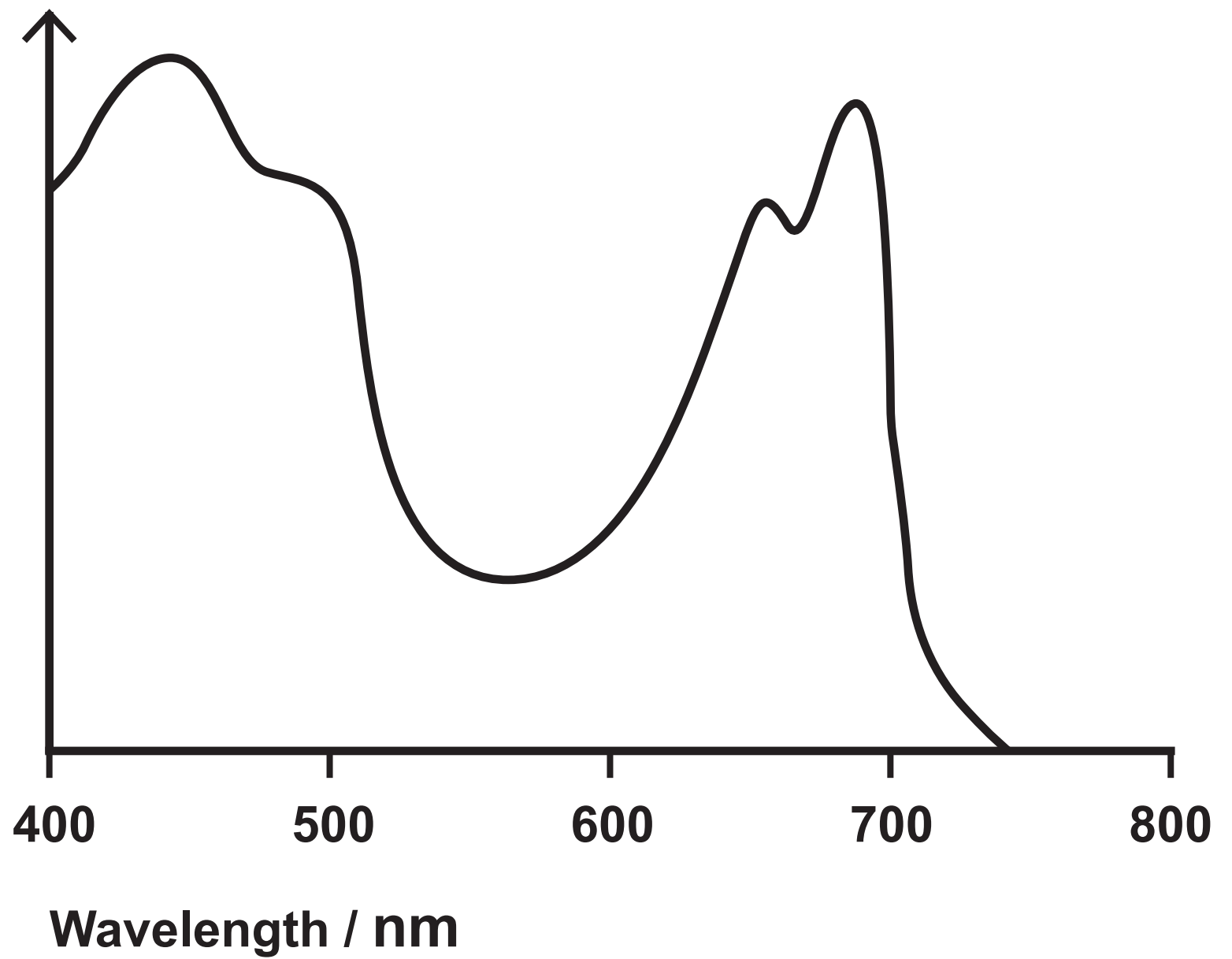
Spare Copies

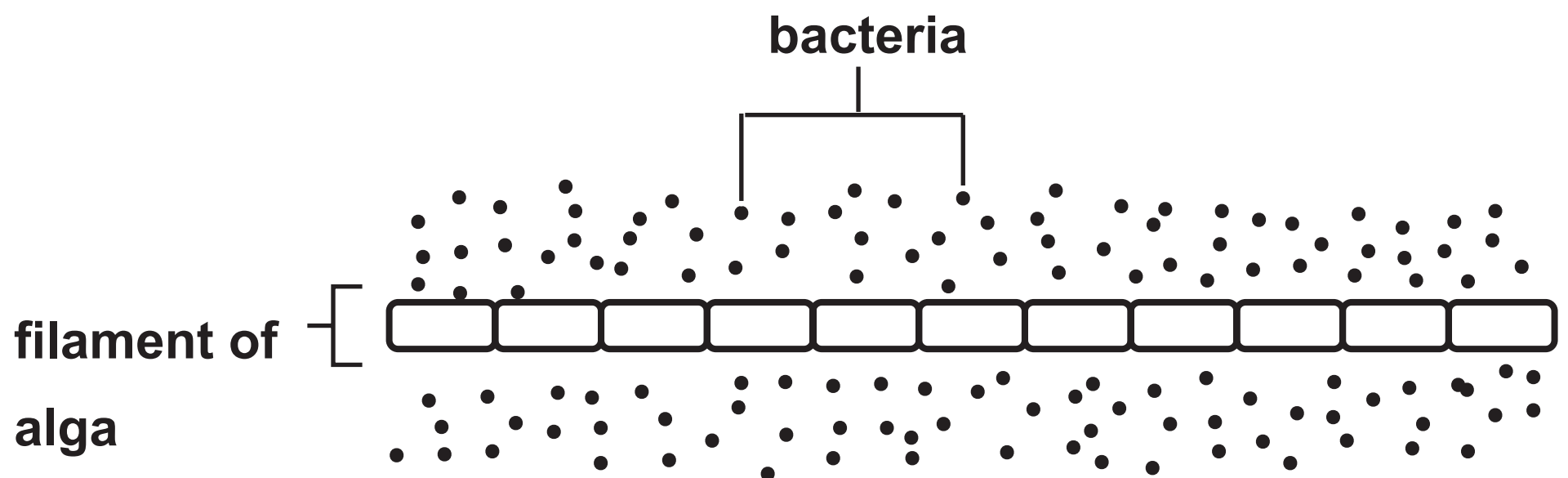
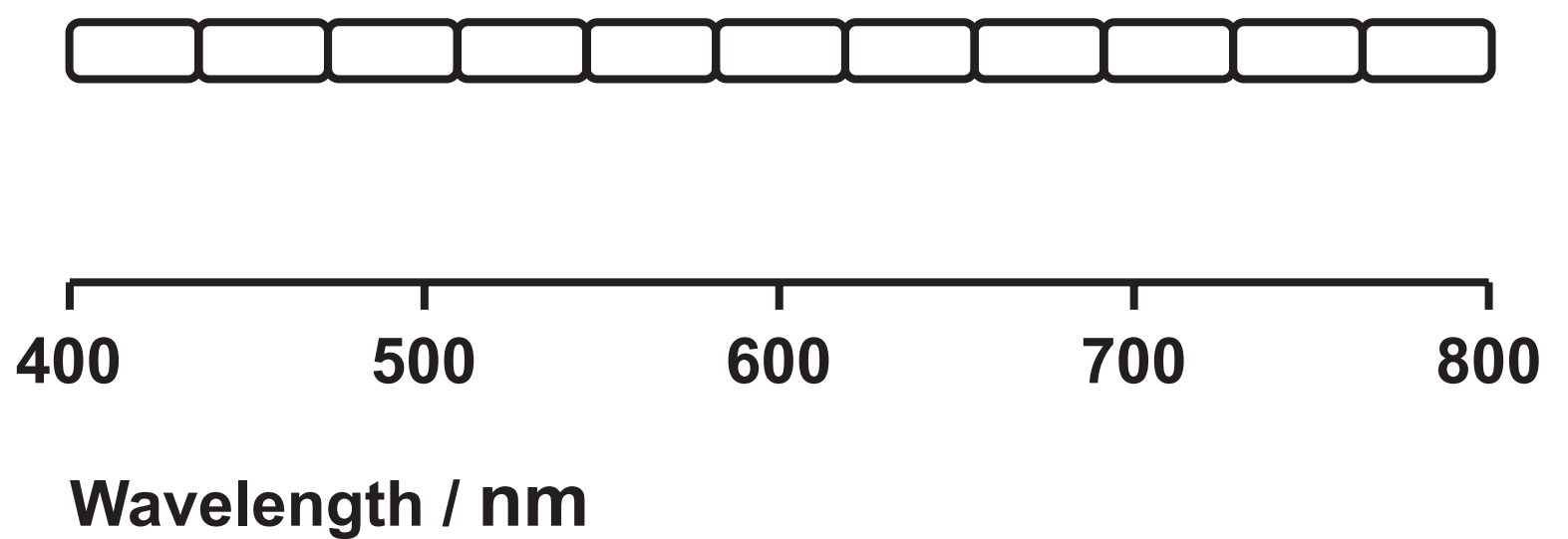
31	Question 2(a) – spare copy
32	Question 3(a) – Diagram – spare copy
33	Question 9(d) – Diagram 2

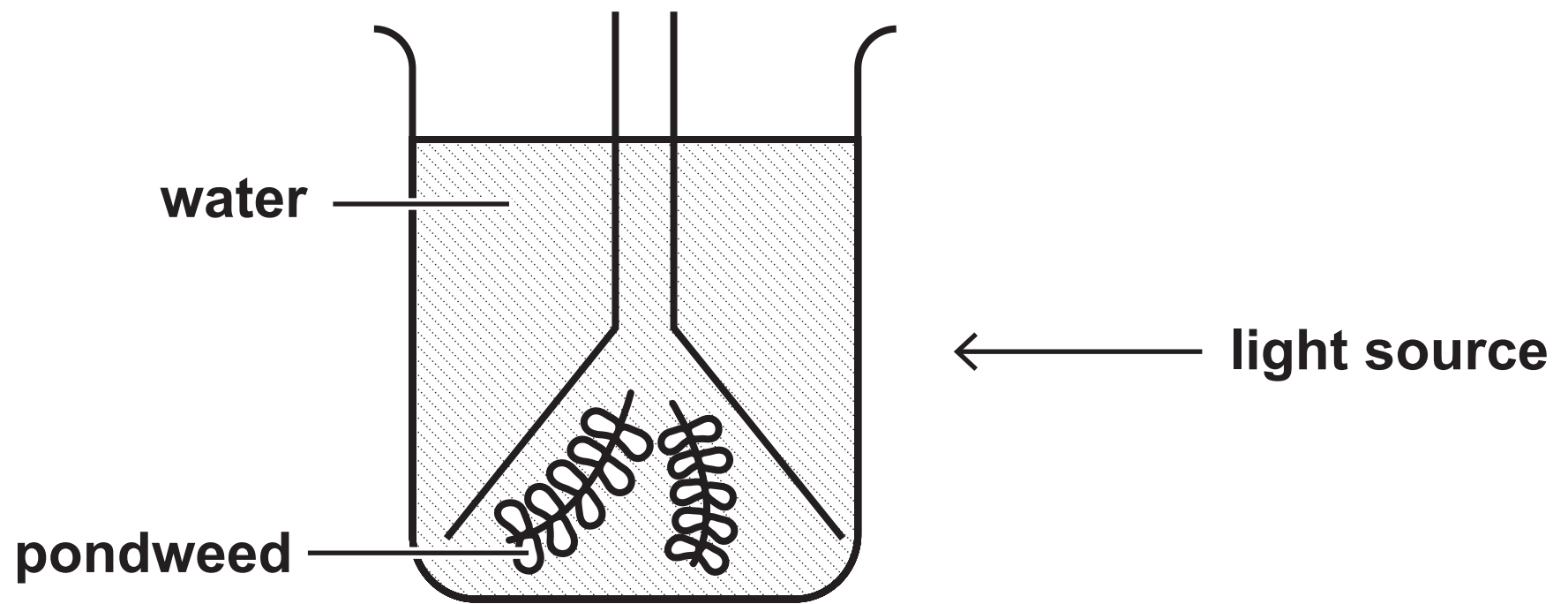
Question 1



Question 2(a)

Question 3(a) – Graph**Rate of photosynthesis / a.u.****(continued on the next page)**

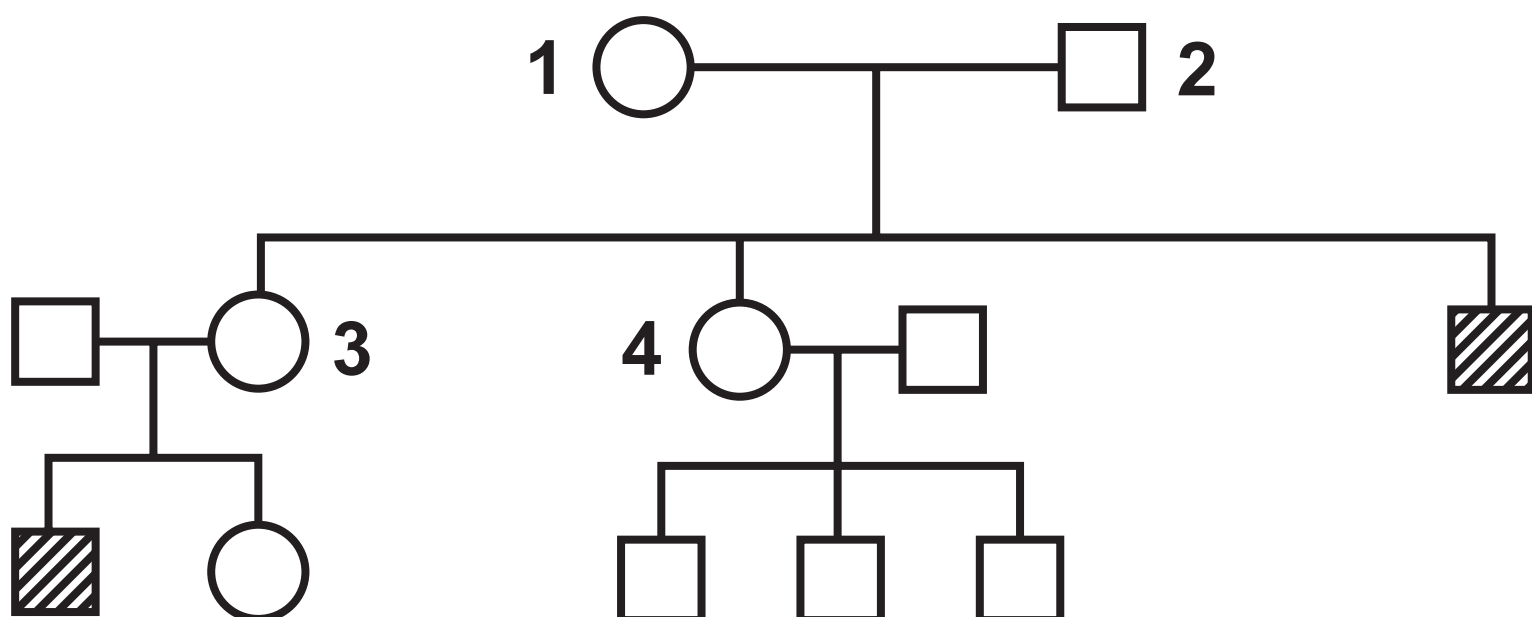
Question 3(a) continued. – Diagram**START OF INVESTIGATION****END OF INVESTIGATION**

Question 3(b)

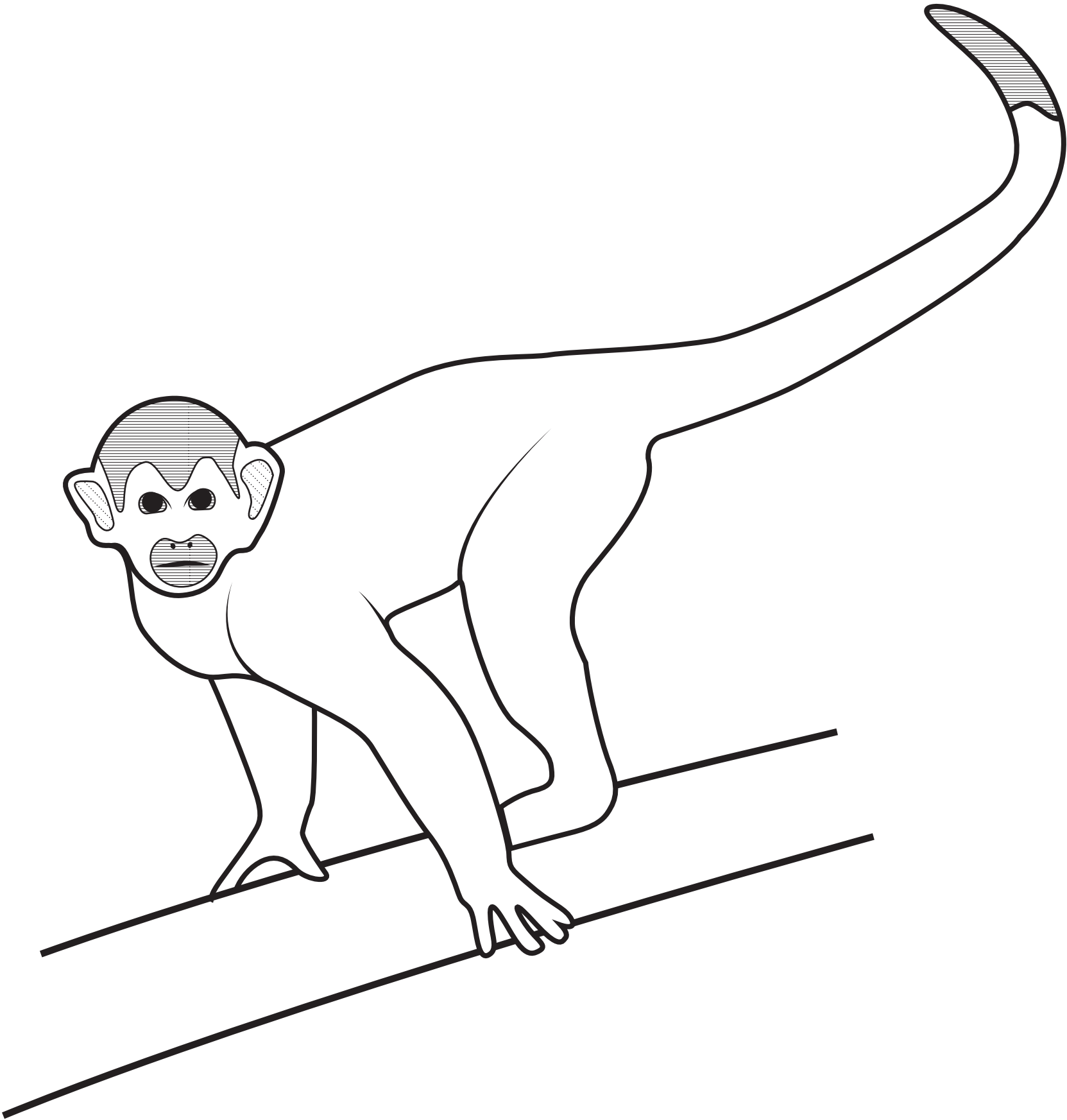
Question 4(a)(iii)

KEY

- Female with red-green vision
- ◐ Female with colour blindness
- Male with red-green vision
- ◑ Male with colour blindness



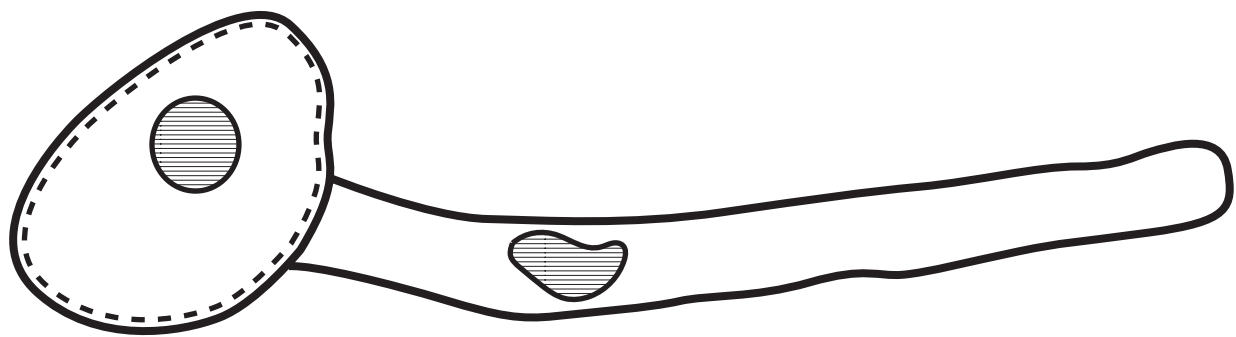
Question 4(b)



Question 4(b)(i) – Blank page

Question 4(b)(ii) – Blank page

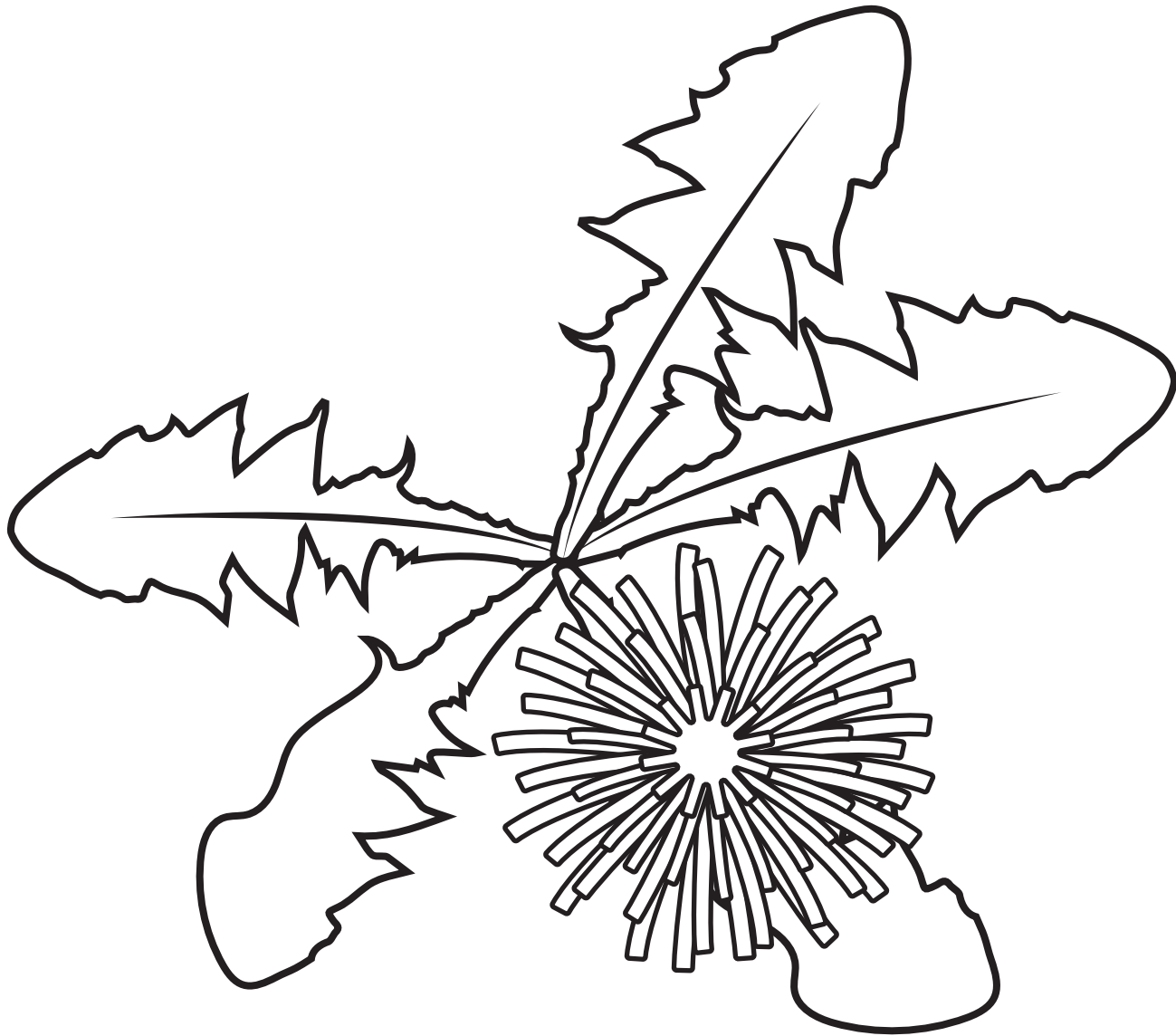
Question 5(a)



Question 5(b)

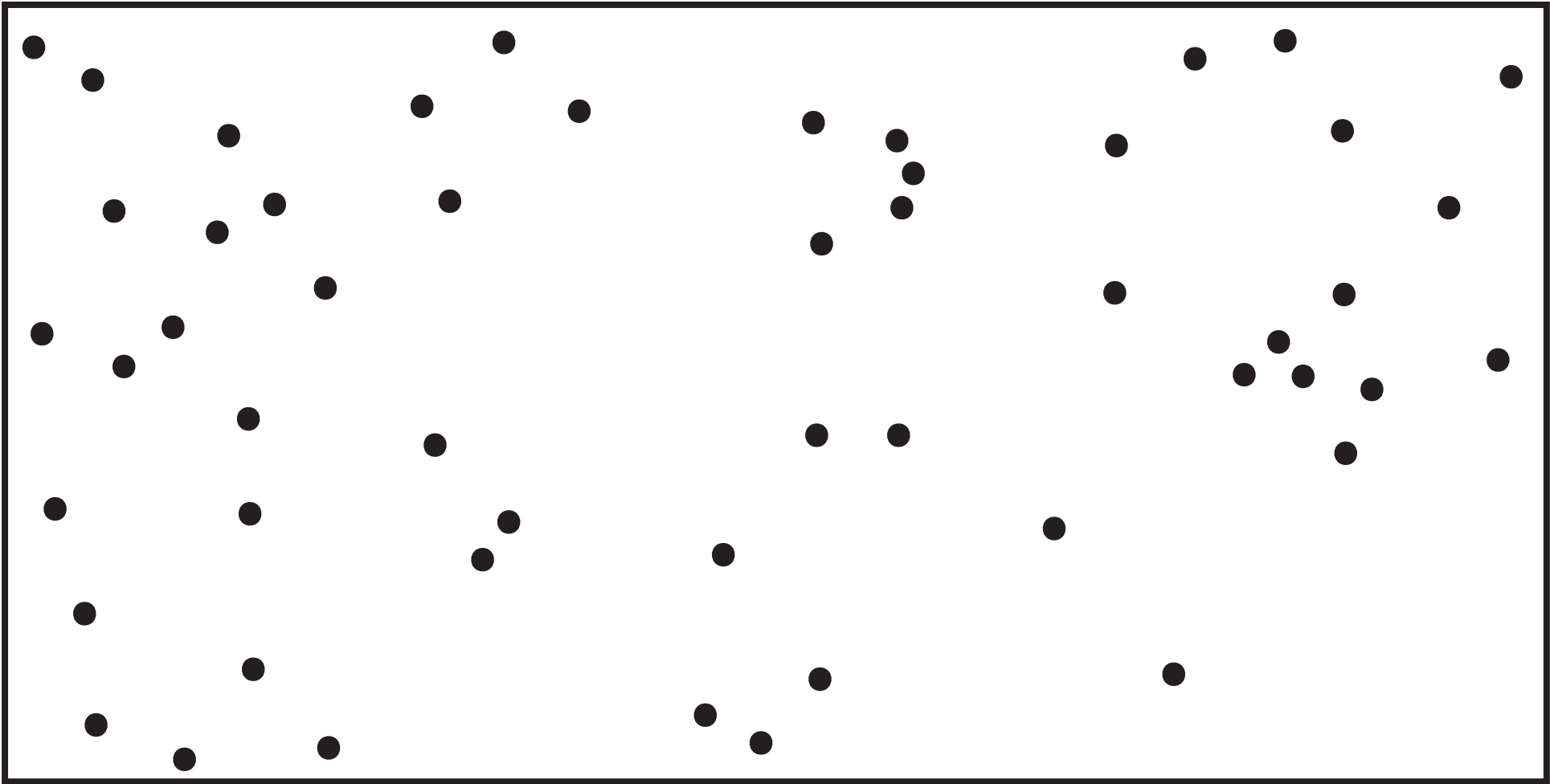
Concentration of calcium nitrate / mg dm^{-3}	Percentage germination of pollen grains after each hour (%)			
	1	2	3	4
0	0	0	0	0
300	50	55	65	65
400	50	58	60	69
500	50	65	70	79

Concentration of calcium nitrate / mg dm^{-3}	Mean pollen tube length after each hour / μm			
	1	2	3	4
0	0	0	0	0
300	120	261	284	355
400	256	284	355	426
500	341	412	455	547

Question 6(a) – Image

(continued on the next page)

Question 6(a) continued. – Diagram



(continued on the next page)

Question 6(a) continued. – Table

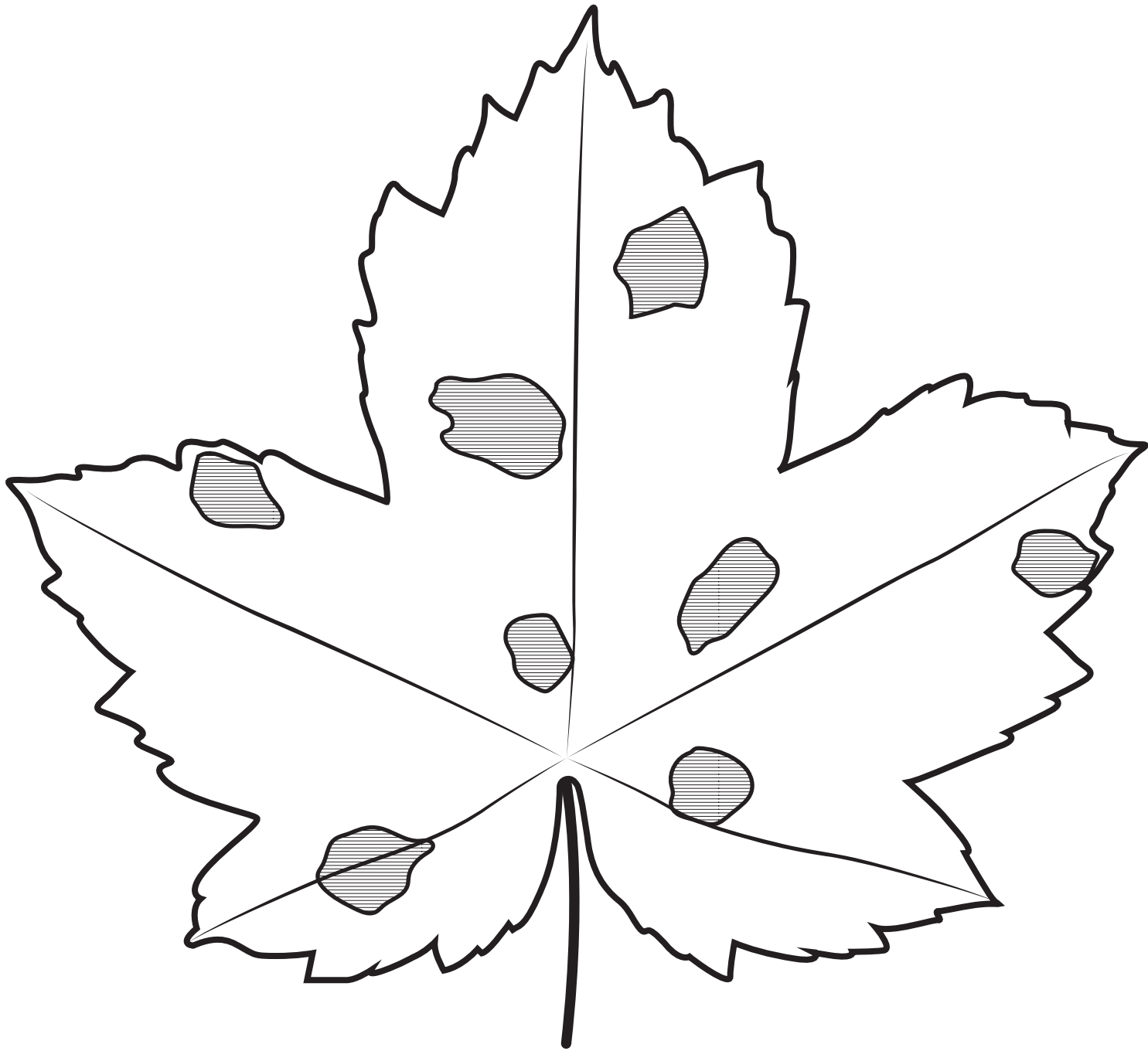
Size of quadrat/m ²	1	0.25	0.01
Number of quadrats used	5	20	500
Total number of dandelion plants recorded	1	3	6

Question 7(a)



Temperature / °C	10	20	30	40	50	60	70	80
Absorbance of light	0.25	0.33	0.39	0.46	0.53	0.55	0.50	0.33

Question 8



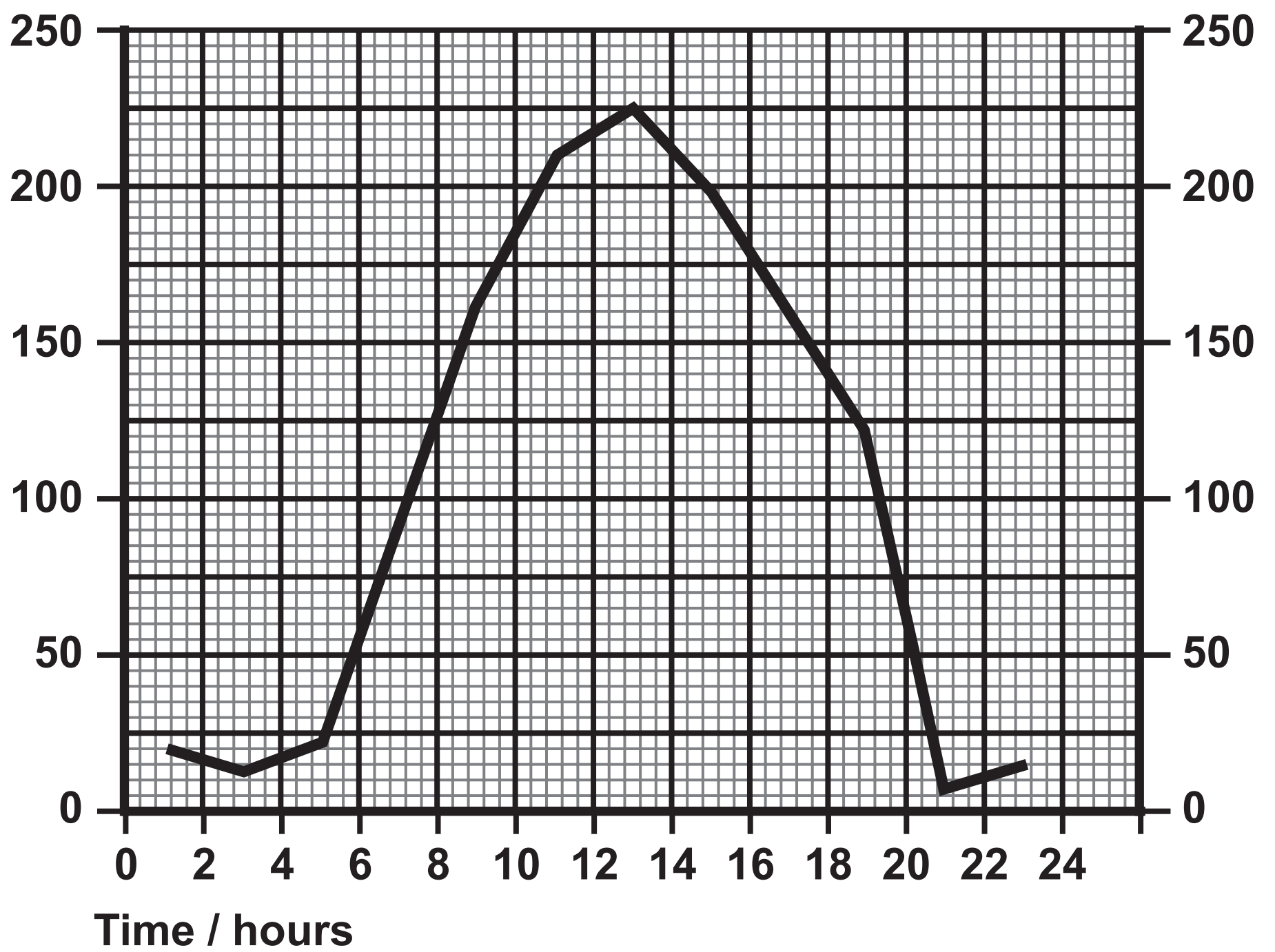
Question 8(a)(ii)

Location	Number of tar spots per leaf					Mean	SD
Near road	8	17	21	4	15	12.93	6.78
	12	5	3	7	13		
	18	22	24	16	9		
Parkland	20	17	13	14	24	17.07	4.06
	10	21	16	13	18		
	14	23	21	15	17		

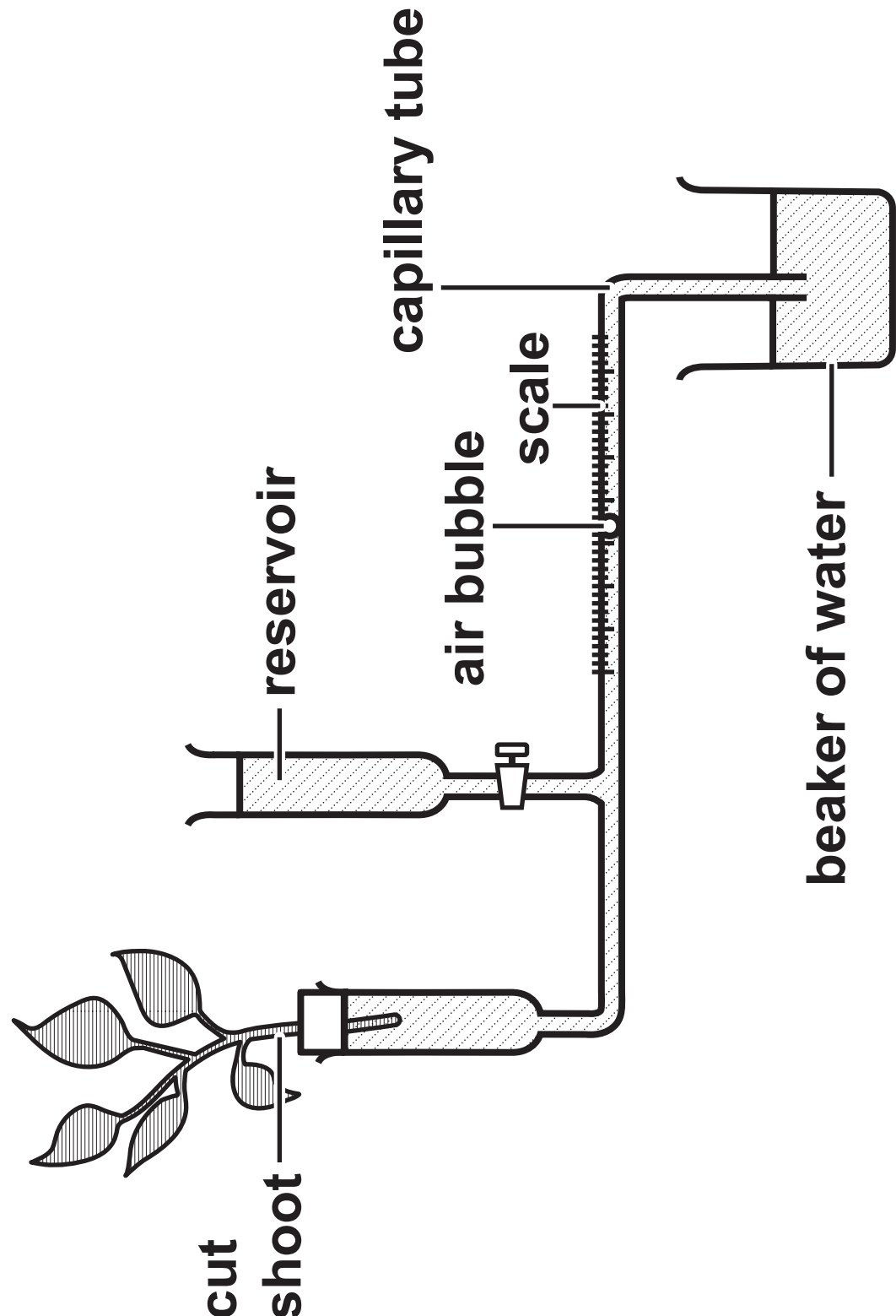
Question 8(a)(iii)

Degrees of freedom	$p = 0.10$	$p = 0.05$	$p = 0.01$
14	1.76	2.14	2.98
15	1.75	2.13	2.95
16	1.75	2.12	2.92
17	1.74	2.11	2.90
18	1.73	2.10	2.88
19	1.73	2.09	2.86
20	1.72	2.09	2.85
21	1.72	2.08	2.83
22	1.72	2.07	2.82
23	1.71	2.07	2.81
24	1.71	2.06	2.80
25	1.71	2.06	2.79
26	1.71	2.06	2.78
27	1.70	2.05	2.77
28	1.70	2.05	2.76
29	1.70	2.05	2.76
30	1.70	2.04	2.75

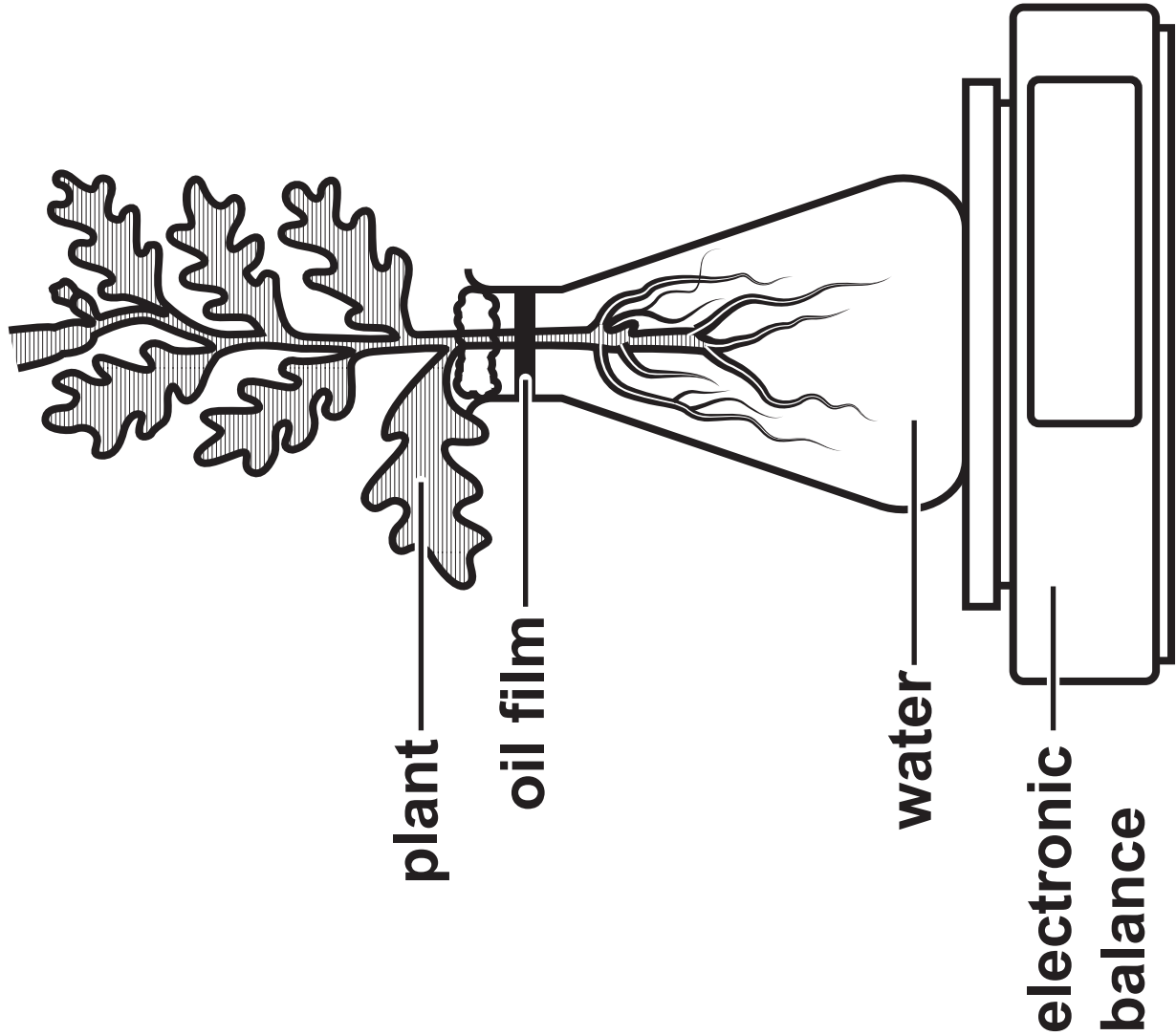
Question 9(b)

Transpiration rate / $\text{g m}^{-2} \text{ hour}^{-1}$ 

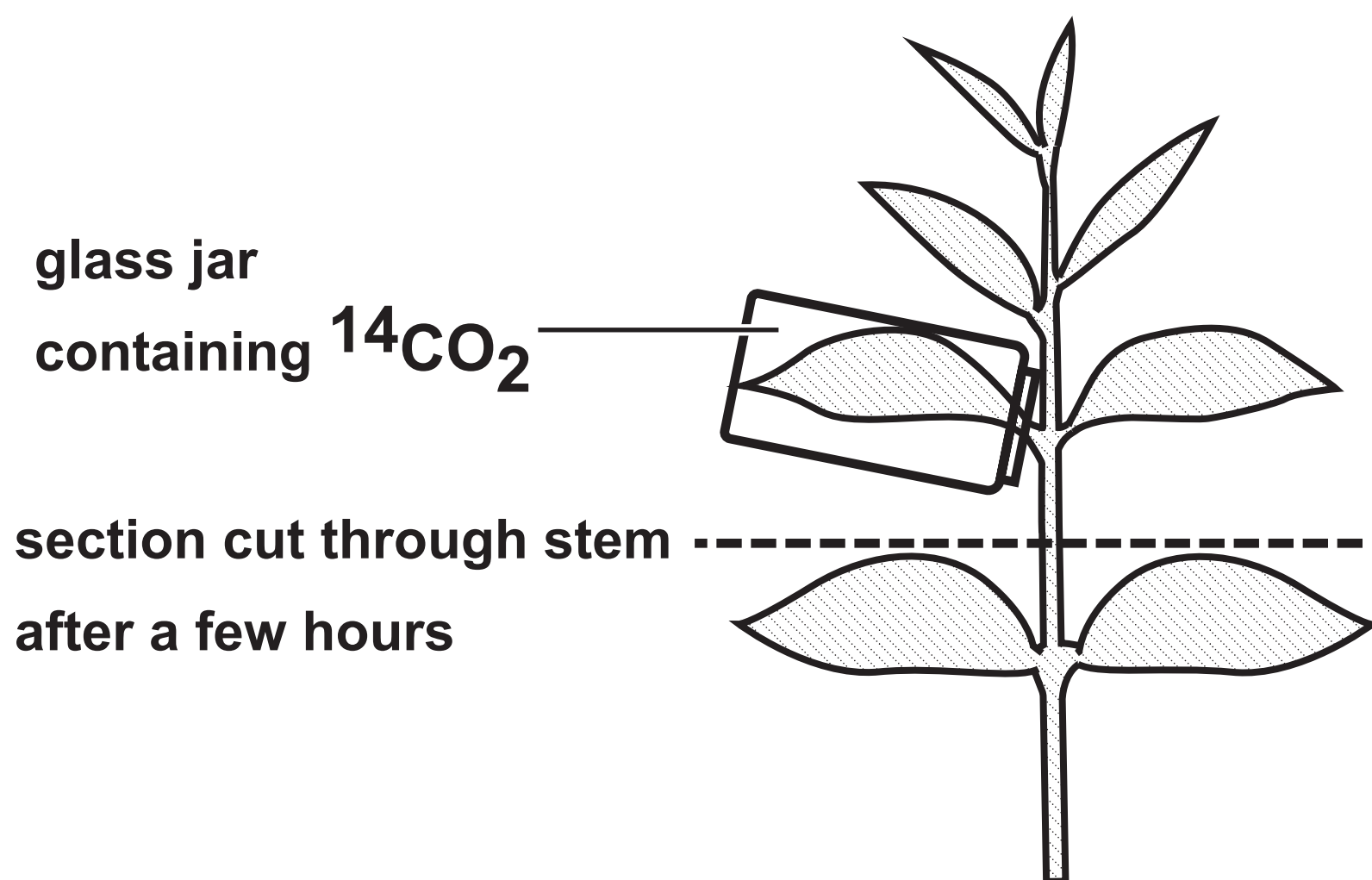
potometer A



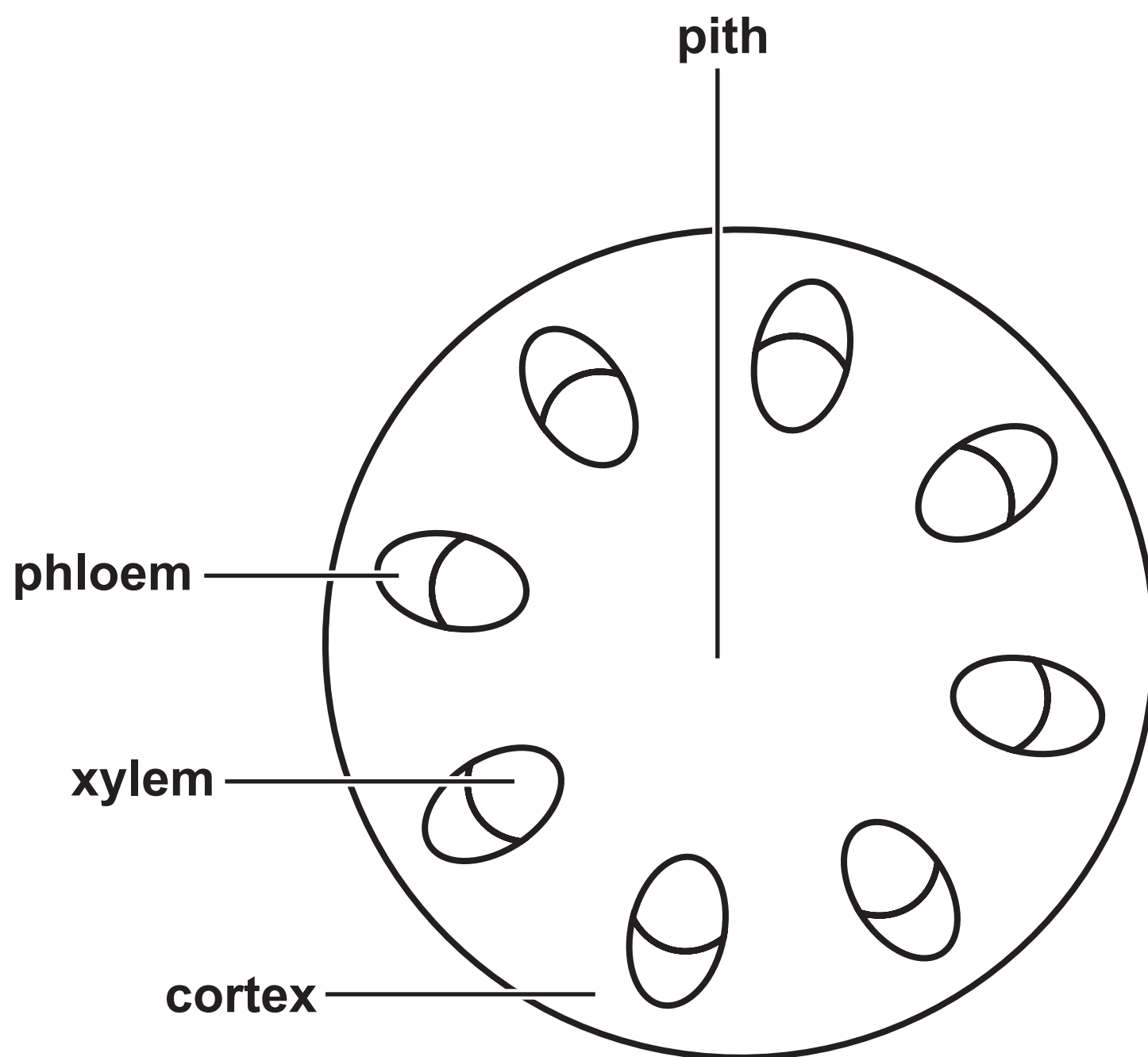
potometer B

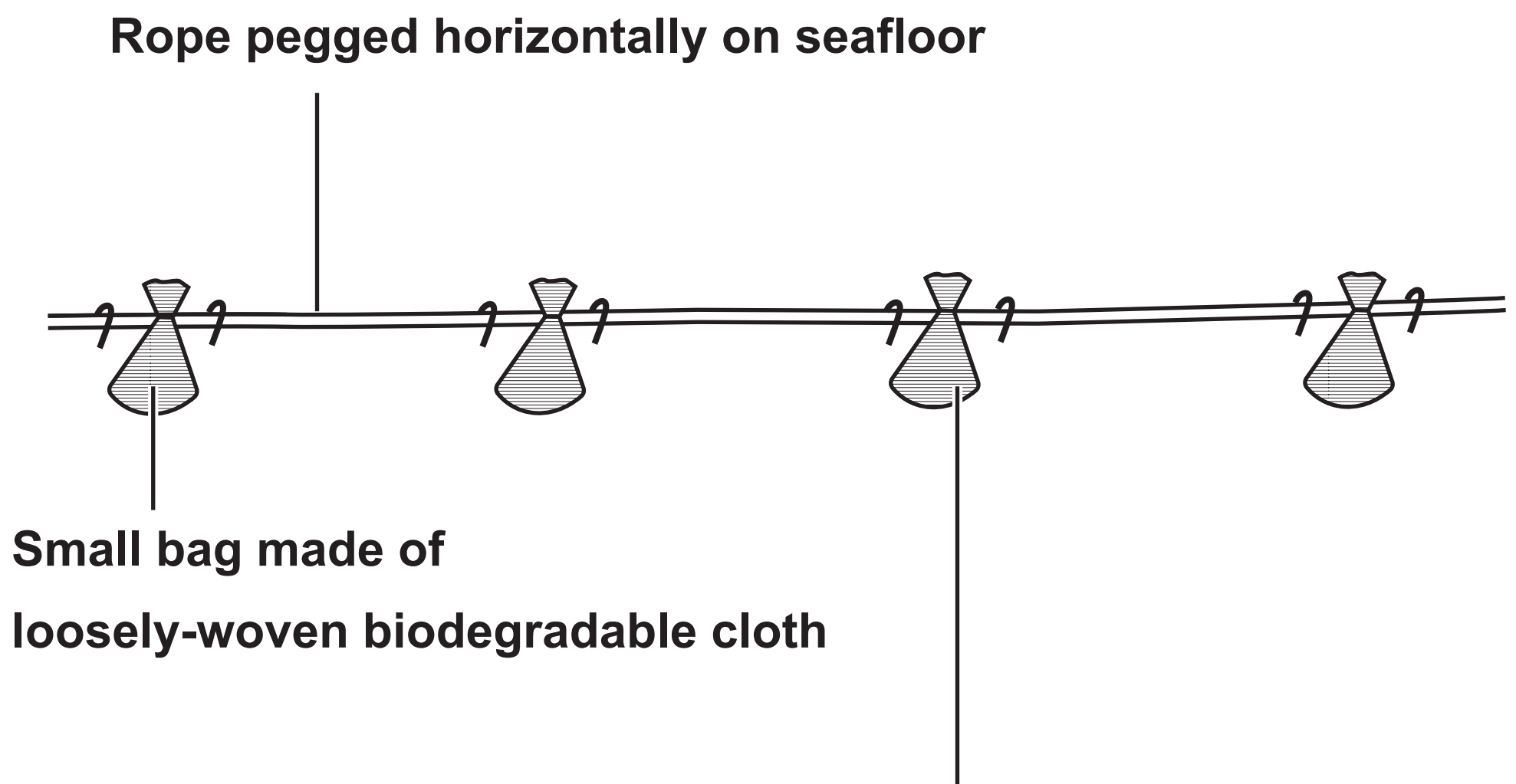


Question 9(d) – Diagram 1



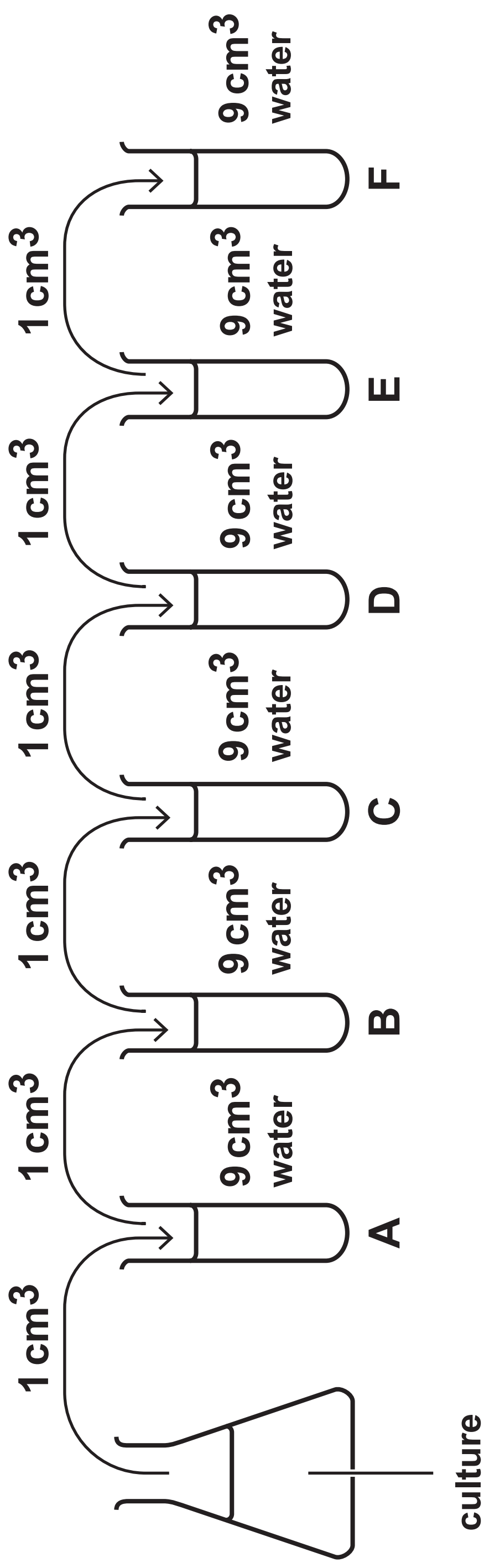
(continued on the next page)

Question 9(d) continued. – Diagram 2

Question 10(b)

Each bag contains 100 seagrass seeds plus marine sediment. Seeds were collected by hand from existing meadows around the UK coast

Question 11(a) – Diagram



(continued on the next page)

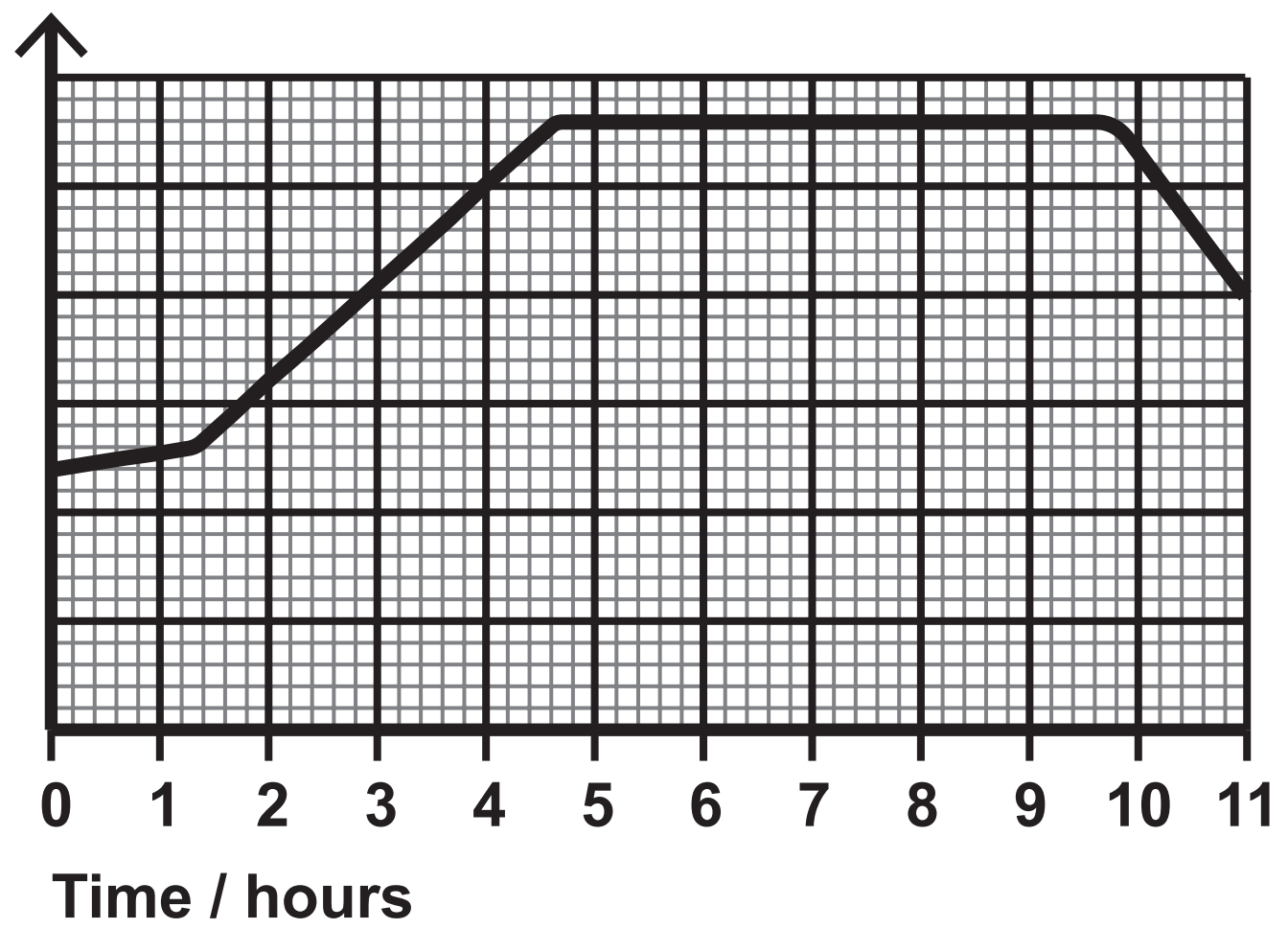
Question 11(a) continued. – Table

* = too many colonies to count

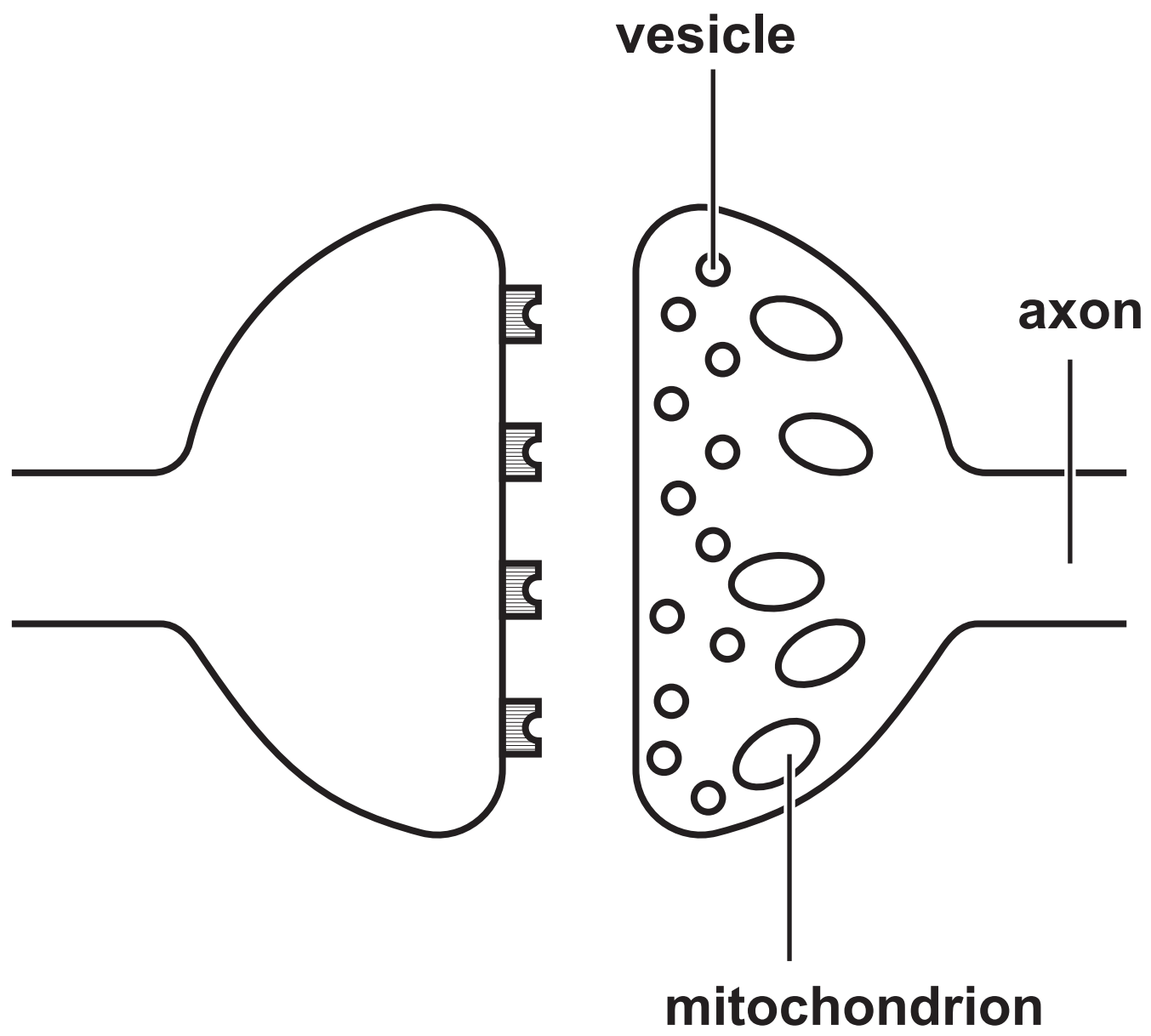
TUBE	A	B	C	D	E	F
Number of colonies on agar plate	*	*	126	13	1	0
Serial dilution factor	1 in 10					

Question 11(a)(ii)

Log_{10} number of bacteria

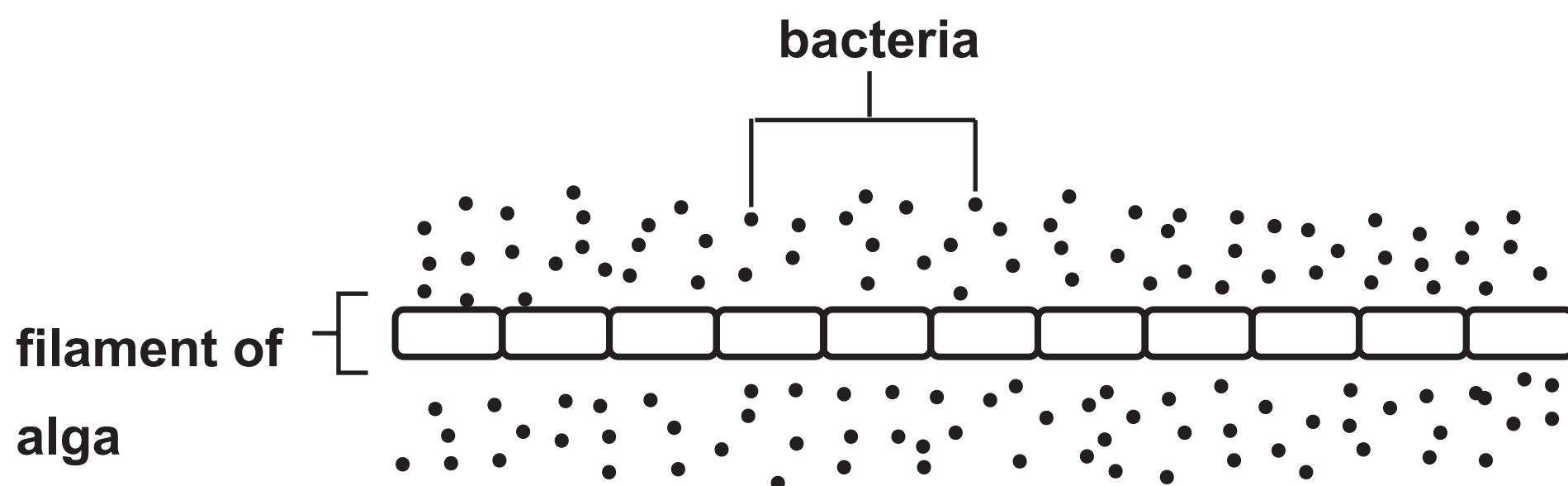


Question 2(a) – spare copy

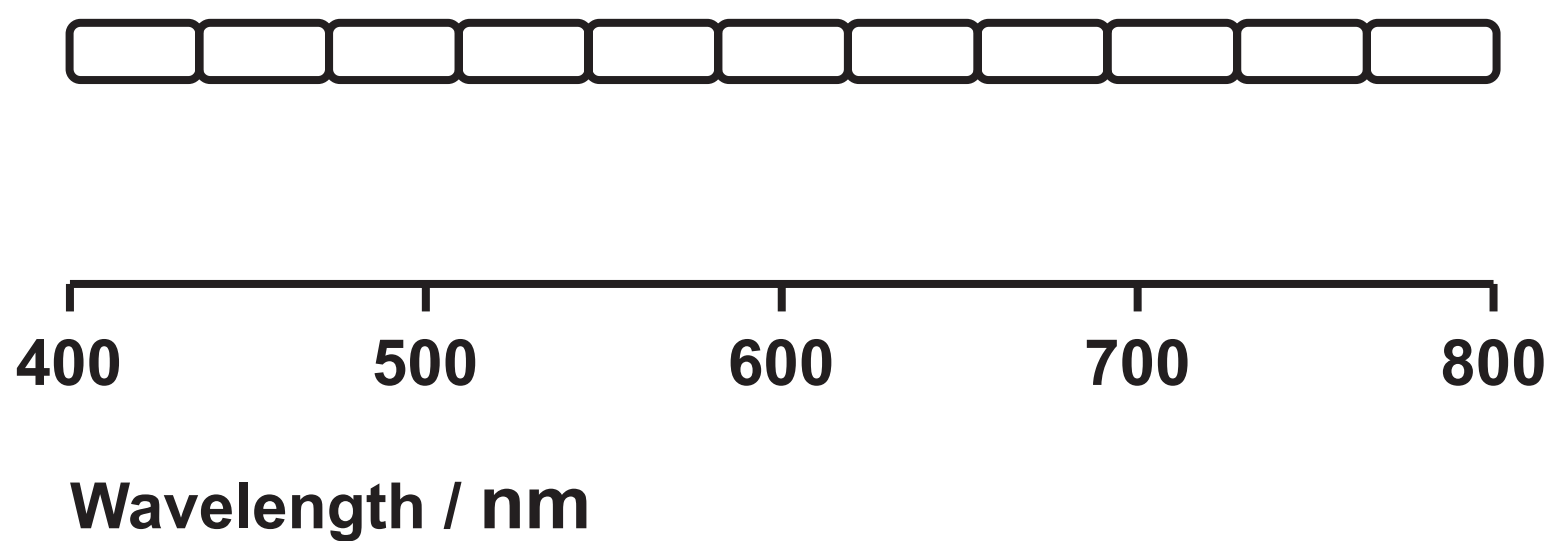


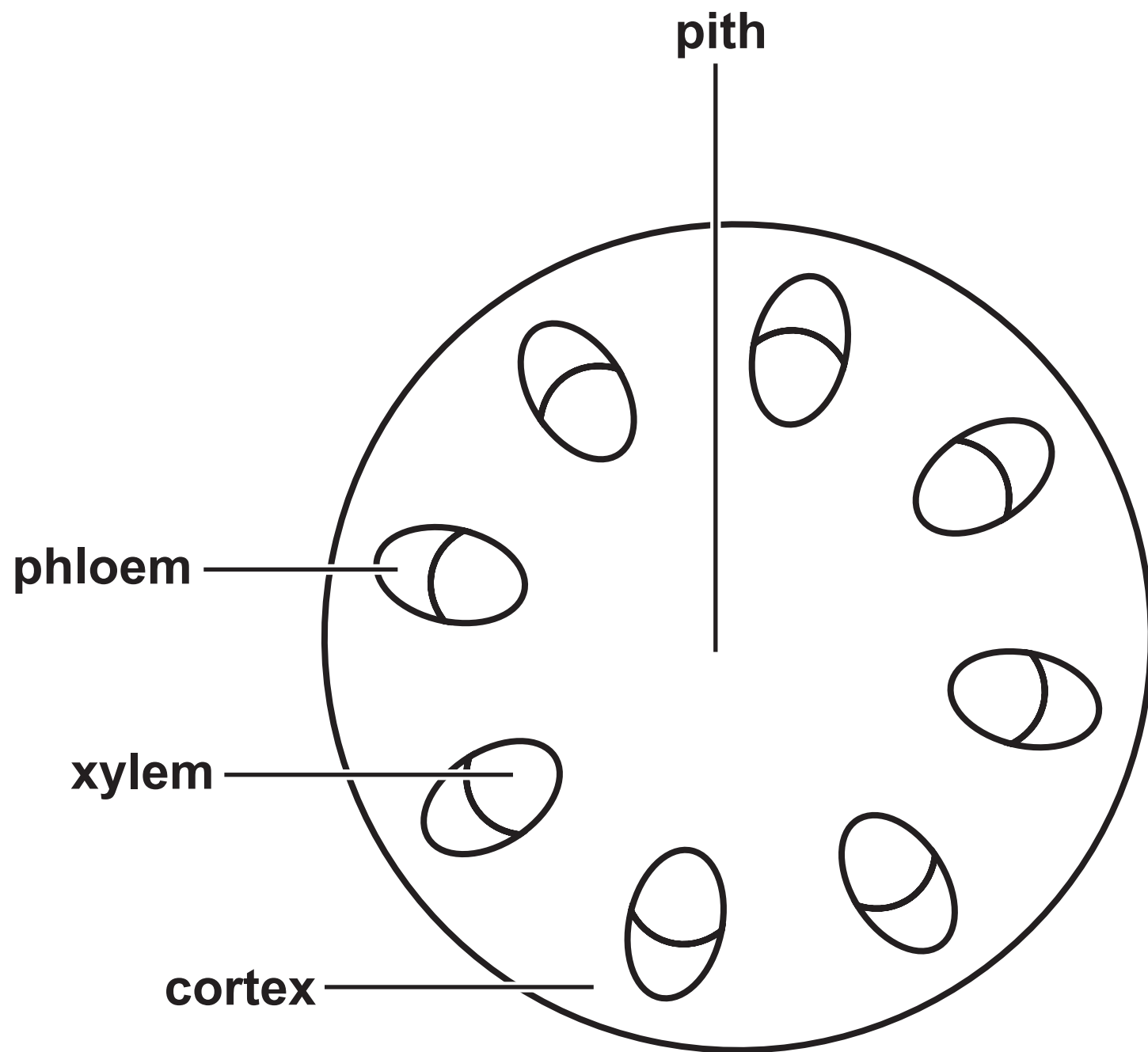
Question 3(a) – Diagram – spare copy

START OF INVESTIGATION



END OF INVESTIGATION



Question 9(d) – Diagram 2 – spare copy

SOURCE INFORMATION

Question 4(b)

Source adapted from: Adrian Hepworth/Alamy Stock Photo

Question 5(a)

**Source adapted from: CAROLINA BIOLOGICAL SUPPLY
COMPANY/SCIENCE PHOTO LIBRARY**

Question 6(a)

Source adapted from: C Hurford

Question 8

Source adapted from: Nigel Cattlin/Alamy Stock Photo