

Biology A (Salters Nuffield)
Advanced
PAPER 1: The Natural Environment and Species Survival

Wednesday 5 June 2024 – Afternoon

Diagram Booklet

THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE QUESTION PAPER 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 in case you need them.

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Question 1(a)(ii)

Trophic level	Energy intake / $\text{kJ m}^{-2}\text{yr}^{-1}$	Energy fixed as biomass / $\text{kJ m}^{-2}\text{yr}^{-1}$
Primary consumers	14 092	4 615
Secondary consumers	1 602	464
Tertiary consumers	88	21

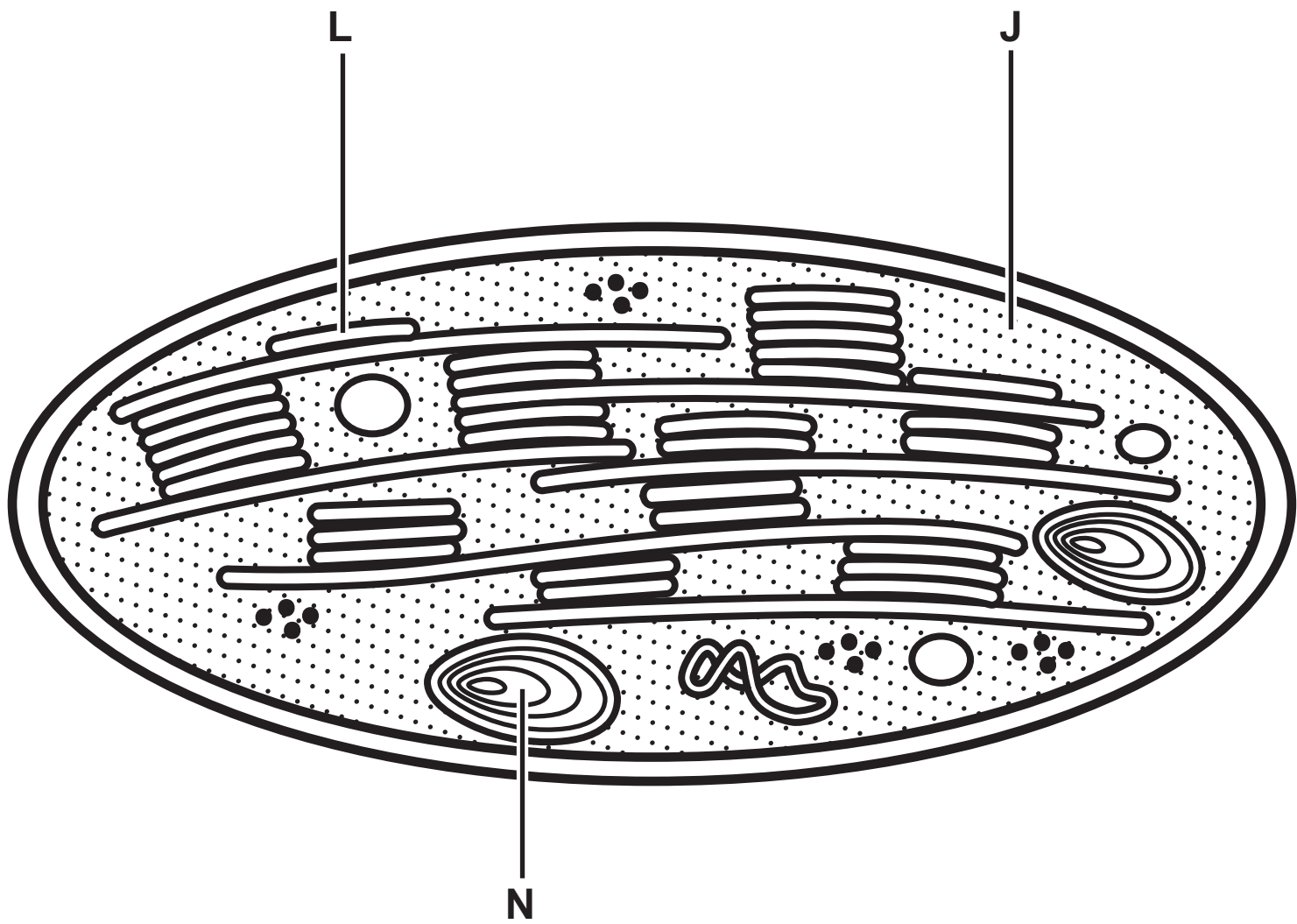
Question 2(b)

Carbon dioxide concentration / ppm	Mean dry mass of leaves / g m ⁻²
160	20.3 ± 2.1
220	20.9 ± 1.7
280	21.4 ± 2.4
330	21.4 ± 2.4
660	26.6 ± 5.2
990	30.5 ± 5.2

Question 3(b)

Procedure	Type of trial	
	William Withering	Contemporary drug trial
Use of a placebo		✓
Testing of dose		✓
Tested on healthy volunteers		✓
Double blind trial		✓

Question 5(a)



Question 6(b)

KEY

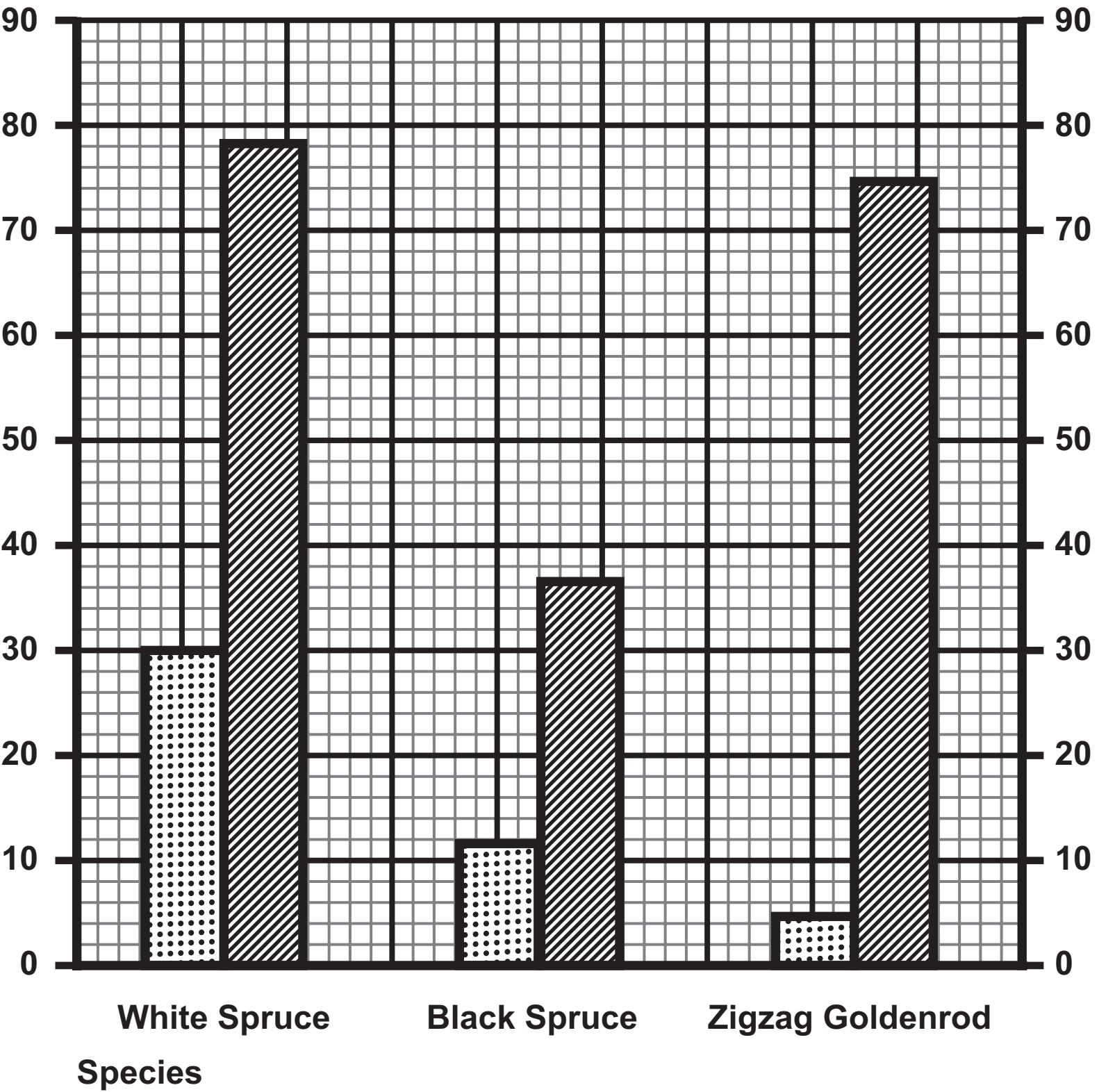


mean spring temperature



mean spring temperature +5 °C

Percentage germination (%)



Question 7(b)

Colour of deer	Number of deer
Brown	550
White	250

Question 8(b)

Time, years ago	Frequency of mutation allowing lactase production into adulthood	
	UK	Central Europe
4000	0.096	0.079
3000	0.280	0.093
2000	0.680	0.250
1000	0.770	0.590
0 (Present)	0.740	0.440

Question 9(c)

Treatment		Comment
Drug	Entecavir	Tablet taken daily that inhibits hepatitis B viral polymerase
	Interferon	Weekly injection required
Hepatitis B antibodies		Can be given to newborn babies at risk of infection
Vaccination		Three doses provide long-term protection for 95% of those vaccinated

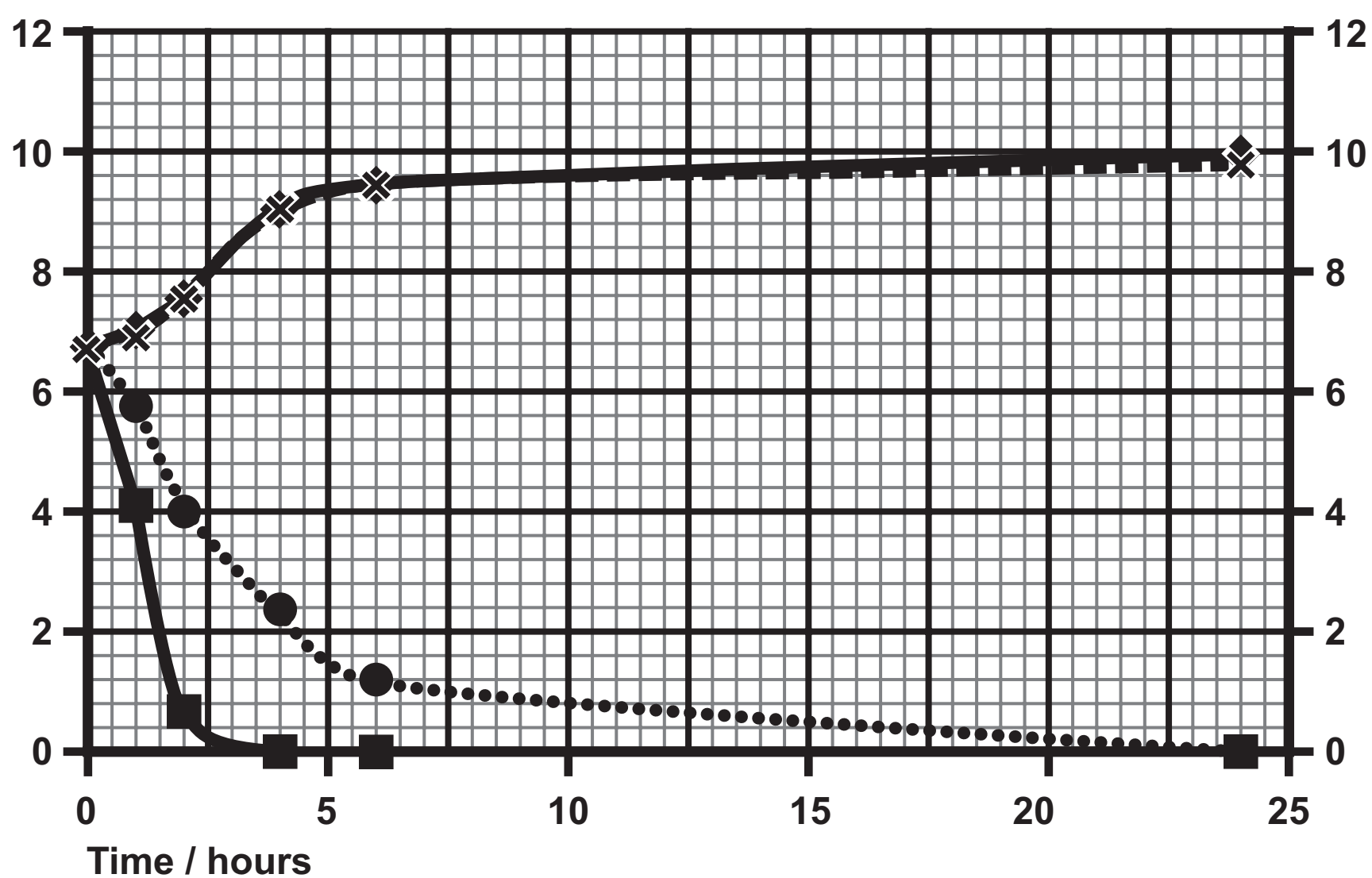
Question 10(b)

KEY

- ◆— no antibiotic
- ...●... antibiotic A
- antibiotic B
- ×— ciprofloxacin

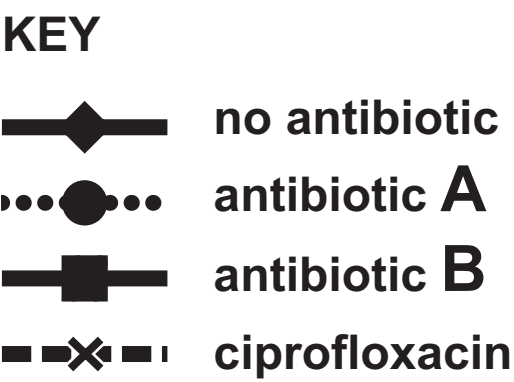
BACTERIA SPECIES P

Log_{10} viable cells per cm^3



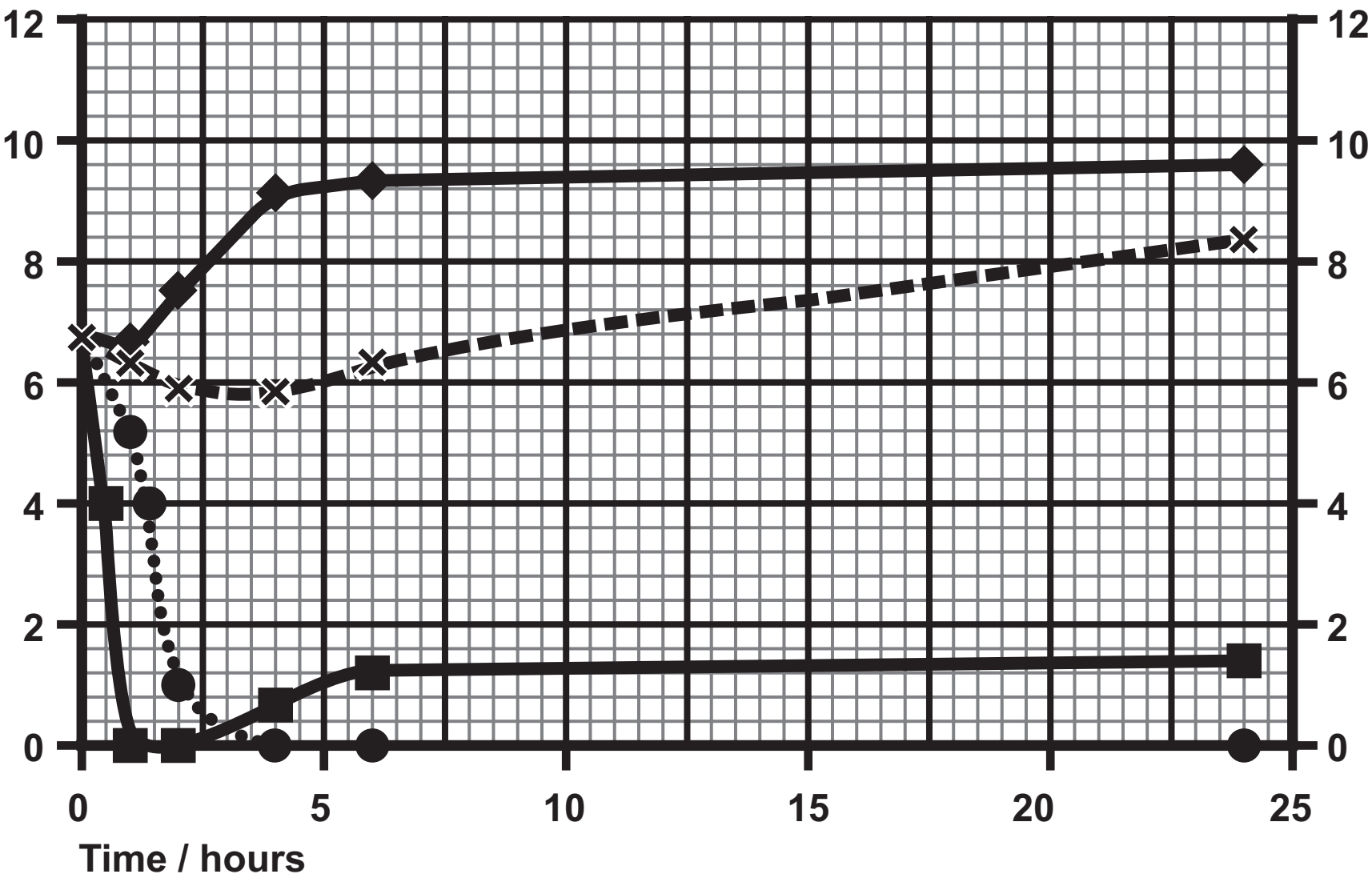
(continued on the next page)

10(b) continued.



BACTERIA SPECIES Q

Log₁₀ viable cells per cm³



Question 3(b)

Procedure	Type of trial	
	William Withering	Contemporary drug trial
Use of a placebo		✓
Testing of dose		✓
Tested on healthy volunteers		✓
Double blind trial		✓

Source information

Question 5(a)

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