

Paper Reference(s) 9BN0/01
Pearson Edexcel Level 3 GCE

Biology A (Salters Nuffield)

Advanced

**PAPER 1: The Natural Environment and
Species Survival**

Diagram Booklet

V67090RA

INSTRUCTIONS

**THIS DIAGRAM BOOKLET MUST NOT
BE RETURNED WITH THE QUESTION
PAPER AT THE END OF THE
EXAMINATION.**

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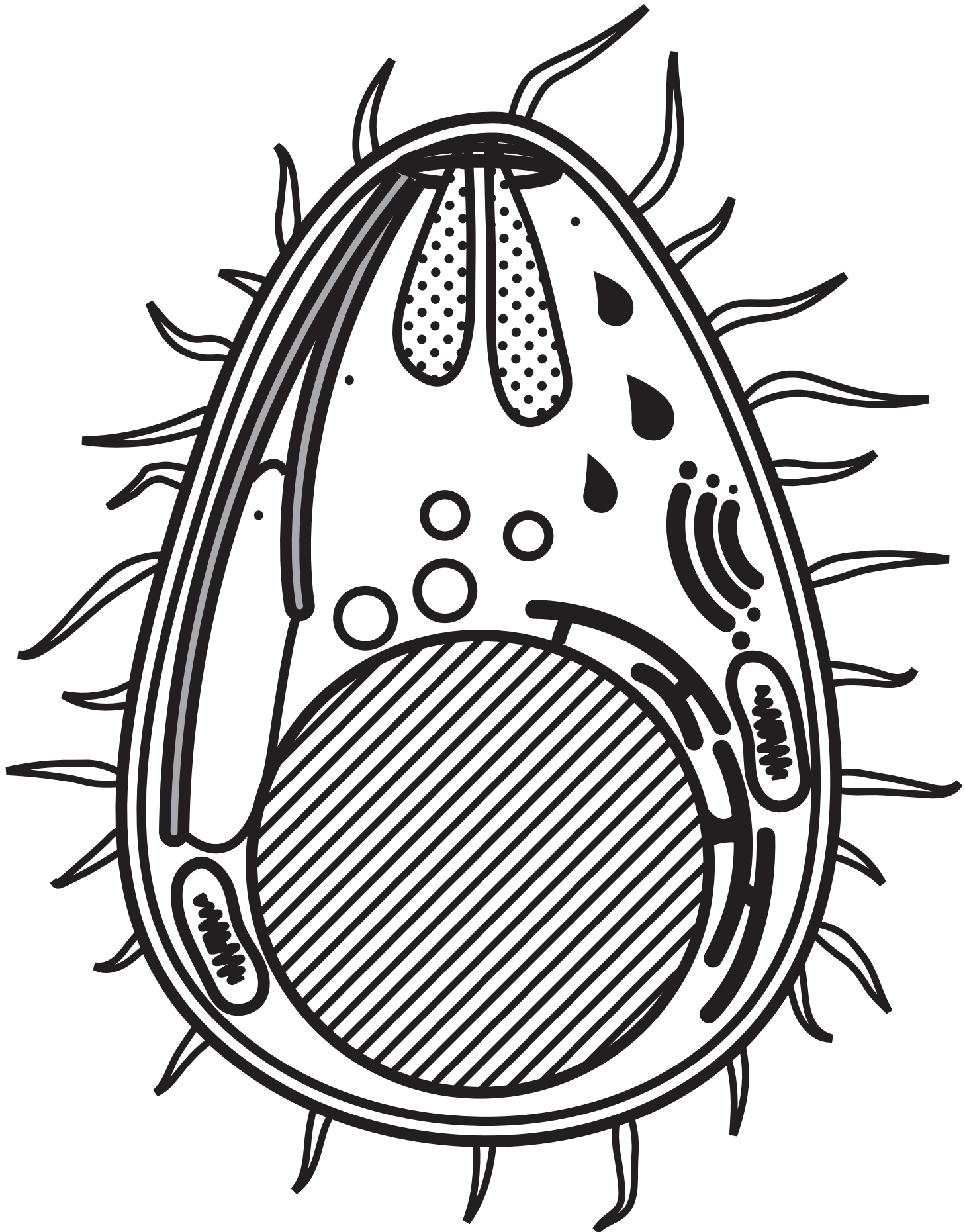
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Question 2(b)

Source of protein	Mass of greenhouse gas released in the production of one serving of the protein / kg
Beef	7·0
Lamb	5·0
Chicken	2·5
Cheese	2·0
Tofu (from soya beans)	1·0
Nuts	0·5

Question 4(a)



Question 5(b)

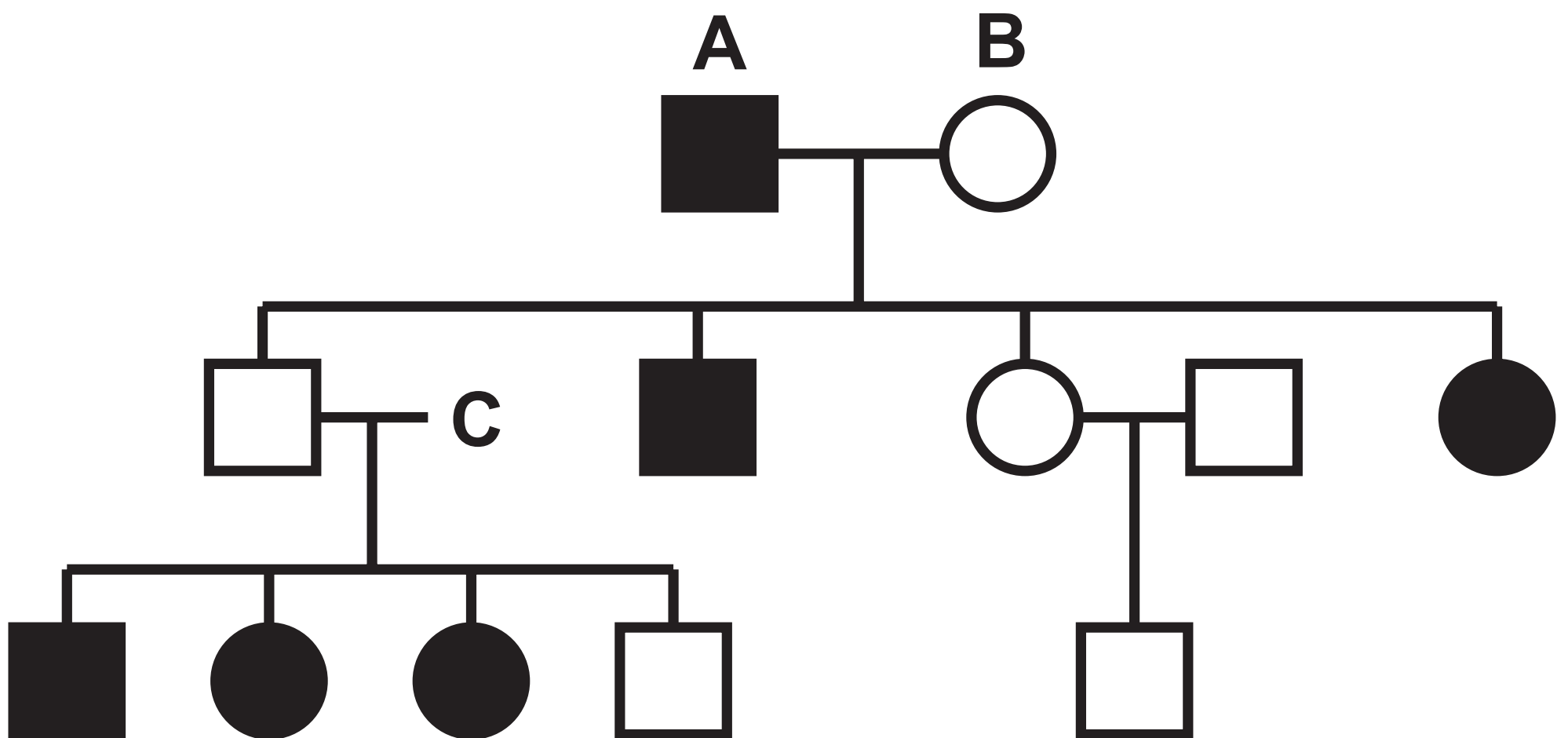
KEY

■ Affected male

● Affected female

□ Unaffected male

○ Unaffected female



Question 7(a)

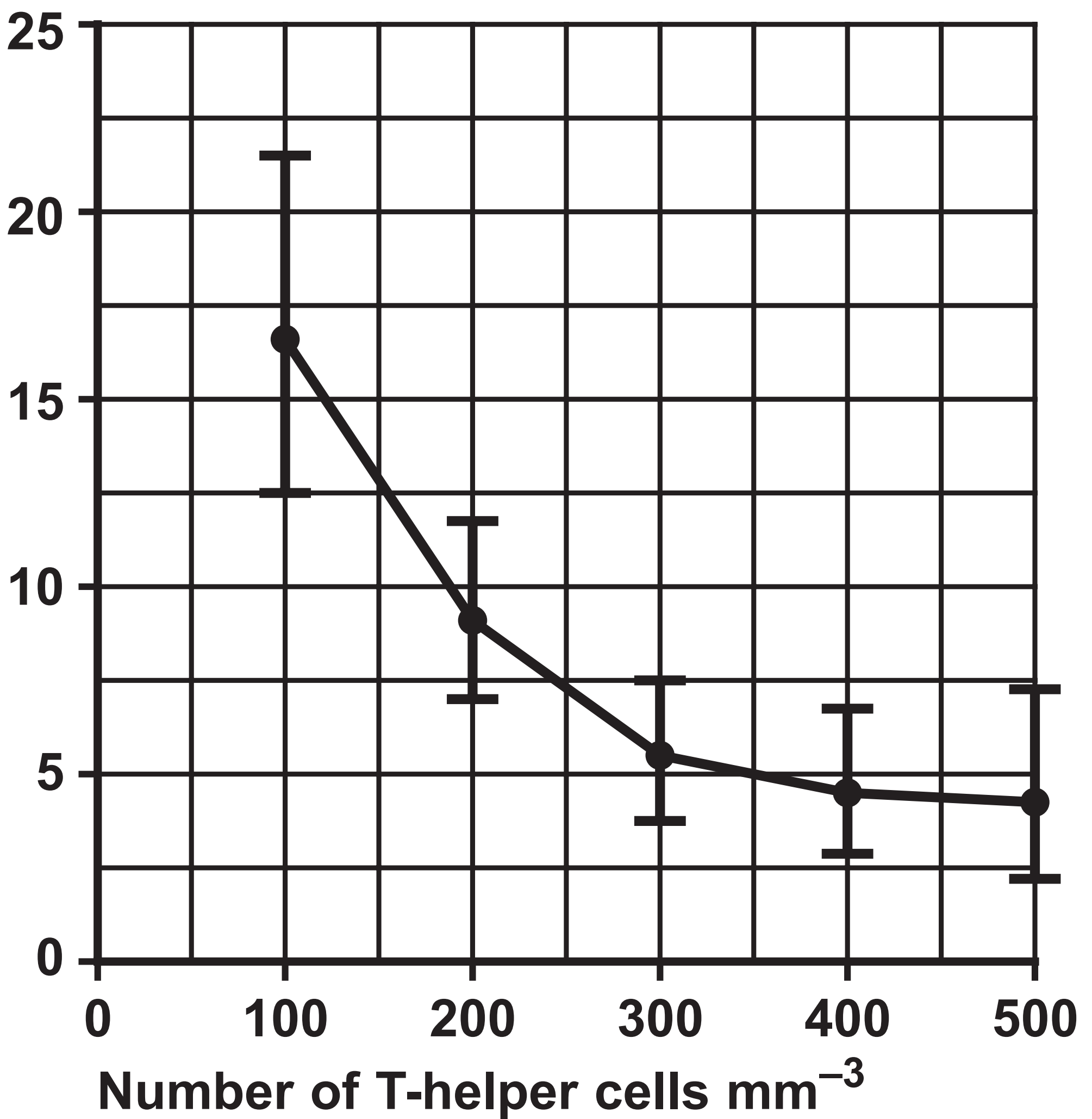
Year	Number of cases of measles	Percentage of children vaccinated (%)
2012	1564	91·2
2013	1855	92·3
2014	135	92·7
2015	71	92·3
2016	556	91·9
2017	216	91·6

Question 8(c)

HIV status	Percentage of people with TB in 2008 (%)	Estimated number of patients with TB who died in 2008	Percentage of deaths due to TB (%)
HIV positive	15	521 700	
HIV negative	85	1 278 400	16

Question 8(c)(iii)

TB incidence
/ a.u.



Question 9(c)(ii)

Gene	Allele richness (Finland population) X	Allele richness (USA population) Y	X – Y	(X – Y) ²	(X – Y) ² / Y
1	6	14	8	64	4.57
2	4	5	1	1	0.2
3	7	13	6	36	2.77
4	7	15	8	64	4.27

(continued on next page)

Turn over

Question 9(c)(ii) continued.

Gene	Allele richness (Finland population) X (observed)	Allele richness (USA population) Y (expected)	$X - Y$	$(X - Y)^2$	$(X - Y)^2 / Y$
5	6	6	0	0	0
6	8	12	4	16	1.33
7	2	3	1	1	0.33
8	4	4	0	0	0
9	4	9			
10	3	4			

Question 9(c)(iii)

Degrees of freedom	Probability	
	p = 0·10	p = 0·05
1	2·706	3·841
2	4·605	5·991
3	6·251	7·815
4	7·779	9·488
5	9·236	11·070
6	10·645	12·592
7	12·017	14·067
8	13·362	15·507
9	14·684	16·919
10	15·987	18·307

Question 9(d)

Heterozygosity index for Finland population	Heterozygosity index for North American population
0.692	0.742

Question 10

Species	Shade tolerance	Rate of photosynthesis / a.u.	
		Seedlings grown in 25% of full sunlight	Seedlings grown in 5% of full sunlight
A	Intolerant	410	415
B	Intermediate	300	275
C	Tolerant	180	210
D	Very tolerant	150	215

Question 10(a)(ii)

KEY

—●— 25% light

- - -◆- - - 5% light

Rate of growth
/ a.u.

