BIOLOGY A

OCR 2024

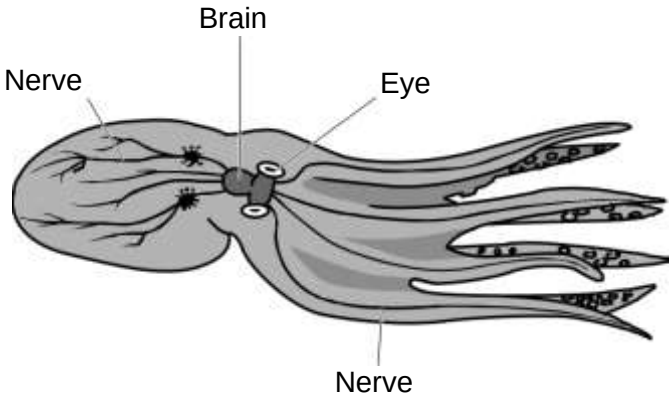
GCSE Biology A (Gateway Science)

J247/03 (Higher Tier)

With Marking Scheme Merged

19 **Fig. 19.1** shows the nervous system of an octopus.

Fig. 19.1



(a) Compare the nervous system of the octopus in **Fig. 19.1** to that of a human.

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..... **[3]**

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5. **Crossed Out Responses**

Where a candidate has crossed out a response and provided a clear alternative then the crossed out response is not marked. Where no alternative response has been provided, examiners may give candidates the benefit of the doubt and mark the crossed out response where legible.

Rubric Error Responses – Optional Questions

Where candidates have a choice of question across a whole paper or a whole section and have provided more answers than required, then all responses are marked and the highest mark allowable within the rubric is given. Enter a mark for each question answered into RM assessor, which will select the highest mark from those awarded. *(The underlying assumption is that the candidate has penalised themselves by attempting more questions than necessary in the time allowed.)*

Multiple Choice Question Responses

When a multiple choice question has only a single, correct response and a candidate provides two responses (even if one of these responses is correct), then no mark should be awarded (as it is not possible to determine which was the first response selected by the candidate).

When a question requires candidates to select more than one option/multiple options, then local marking arrangements need to ensure consistency of approach.

Contradictory Responses

When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

Short Answer Questions (requiring only a list by way of a response, usually worth only one mark per response)

Where candidates are required to provide a set number of short answer responses then only the set number of responses should be marked. The response space should be marked from left to right on each line and then line by line until the required number of responses have been considered. The remaining responses should not then be marked. Examiners will have to apply judgement as to whether a 'second response' on a line is a development of the 'first response', rather than a separate, discrete response. *(The underlying assumption is that the candidate is attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses.)*

The breakdown of Assessment Objectives for GCSE (9-1) in Biology A:

	Assessment Objective
AO1	**Demonstrate knowledge and understanding of scientific ideas and scientific techniques and procedures.**
AO1.1	Demonstrate knowledge and understanding of scientific ideas.
AO1.2	Demonstrate knowledge and understanding of scientific techniques and procedures.
AO2	**Apply knowledge and understanding of scientific ideas and scientific enquiry, techniques and procedures.**
AO2.1	Apply knowledge and understanding of scientific ideas.
AO2.2	Apply knowledge and understanding of scientific enquiry, techniques and procedures.
AO3	**Analyse information and ideas to interpret and evaluate, make judgements and draw conclusions and develop and improve experimental procedures.**
AO3.1	Analyse information and ideas to interpret and evaluate.
AO3.1a	Analyse information and ideas to interpret.
AO3.1b	Analyse information and ideas to evaluate.
AO3.2	Analyse information and ideas to make judgements and draw conclusions.
AO3.2a	Analyse information and ideas to make judgements.
AO3.2b	Analyse information and ideas to draw conclusions.
AO3.3	Analyse information and ideas to develop and improve experimental procedures.
AO3.3a	Analyse information and ideas to develop experimental procedures.
AO3.3b	Analyse information and ideas to improve experimental procedures.

Question			Answer	Marks	AO element	Guidance
			Try a different number/more nerve cell transfers / Use different type of stem cells / Try the technique on more species/humans ✓			**IGNORE** reference to making deaf in two ears
	(c)		**First check the answer on the answer line** **If answer = 1.5 award 2 marks** 10 x 0.15 **OR** 15/100 x 10 ✓ =1.5 ✓	**2**	**2 x 2.2**	**ALLOW** any correct calculating method **ALLOW** 1 500 000 on the answer line for one mark max

Question			Answer	Marks	AO element	Guidance
21	(a)	(i)	**Any two from:** Cell membrane ✓ Nucleus ✓ Ribosomes ✓ Cytoplasm ✓ Mitochondria ✓	**2**	**2 x 1.1**	**ALLOW** ER / golgi / nucleolus / storage granules / chromosomes
		(ii)	Fungi have a cell wall/vacuoles, so not an animal ✓ but no chloroplasts, so not a plant	**1**	**3.2a**	
	(b)		**First check the answer on the answer line** **If answer = 11 400 award 4 marks** Measures the line as 3.2cm/32mm ✓ Converts 32mm to 32000 µm OR 2.8µm converted to 0.0028mm ✓ 32 000 ÷ 2.8 = 11 428.57 ✓ OR 32 ÷ 0.0028 = 11 428.57 = 11 400 (3 s.f.) ✓	**4**	**3 x 2.2** **1.2**	**ALLOW** answers in range 31 to 33mm **ECF** if line incorrectly measured **ECF** if line incorrectly measured or incorrect/no conversion **ALLOW** 1 mark for clear evidence of incorrect answer correctly rounded to 3 significant figures

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO element</th><th>Guidance</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>ALLOW full marks for correct answers calculations based on diameters in the range 31 to 33mm eg:
<table><tr><td>Diameter</td><td>31</td><td>31.5</td><td>32.5</td><td>33</td></tr><tr><td>Conversion</td><td>31000</td><td>31500</td><td>32500</td><td>33000</td></tr><tr><td>Calculation answer</td><td>11071</td><td>11250</td><td>11607</td><td>11785</td></tr><tr><td>Answer to 3 sig figs</td><td>11100</td><td>11300</td><td>11600</td><td>11800</td></tr></table></td></tr>
<tr><td></td><td>(c)</td><td></td><td>Carbon dioxide ✓</td><td>1</td><td>1.1</td><td>ALLOW CO_2</td></tr>
</table>

Question			Answer	Marks	AO element	Guidance
	(d)	(i)	With varicose veins: $\frac{458}{} \times 100 = 1.0\%$ $\frac{}{} \times 100 = 3.3\%$ $\frac{}{} \times 100 = 2.6\%$ Without varicose veins: $\frac{70}{} \times 100 = 4\%$ $\frac{}{} \times 100 = 3.5\%$ $\frac{}{} \times 100 = 2.6\%$;; The percentage of participants with deep vein thrombosis was higher if they had varicose veins ✓ The percentage of participants with the other two conditions was the same/lower if they had varicose veins ✓	4	2.2 2.2 2 x 3.1b	Award 1st mark for any correct percentage calculated Award 2nd mark for any two corresponding percentages calculated enabling comparison **ALLOW** calculations of ratios/decimals e.g., 1 to 95 or 0.0105 **IGNORE** risk of deep vein thrombosis is higher if a person has varicose veins **IGNORE** risk of other conditions is the same or lower if a person has varicose veins
		(ii)	**Any two from:** Methods used are checked ✓ Conclusions formed from the data are checked ✓ Information/facts contained are checked ✓ Gives greater confidence/reliability (in the findings of the research) ✓	2	2 x 2.1	**IGNORE** study/experiment checked / content checked **ALLOW** errors/mistakes are eliminated / more likely to be accurate **ALLOW** trustworthy/more valid/reduce bias