

...day June 20XX – Morning/Afternoon

AS Level Biology A

H020/01 Breadth in biology

PRACTICE MARK SCHEME

Duration: 1 hour 30 minutes

MAXIMUM MARK 70

Final

MARKING INSTRUCTIONS**PREPARATION FOR MARKING****SCORIS**

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *scoris assessor Online Training*; *OCR Essential Guide to Marking*.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are posted on the RM Cambridge Assessment Support Portal <http://www.rm.com/support/ca>
3. Log-in to scoris and mark the **required number** of practice responses (“scripts”) and the **required number** of standardisation responses.

YOU MUST MARK 10 PRACTICE AND 10 STANDARDISATION RESPONSES BEFORE YOU CAN BE APPROVED TO MARK LIVE SCRIPTS.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the scoris 50% and 100% (traditional 50% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone, email or via the scoris messaging system.

5. Work crossed-out:
- where a candidate crosses out an answer and provides an alternative response, the crossed-out response is not marked and gains no marks
 - if a candidate crosses out an answer to a whole question and makes no second attempt, and if the inclusion of the answer does not cause a rubric infringement, the assessor should attempt to mark the crossed-out answer and award marks appropriately.
6. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there then add an annotation to confirm that the work has been seen.
7. There is a NR (No Response) option. Award NR (No Response)
- if there is nothing written at all in the answer space
 - OR if there is a comment which does not in any way relate to the question (e.g. 'can't do', 'don't know')
 - OR if there is a mark (e.g. a dash, a question mark) which isn't an attempt at the question.
- Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).
8. The scoris **comments box** is used by your Team Leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**
- If you have any questions or comments for your Team Leader, use the phone, the scoris messaging system, or email.
9. Assistant Examiners will send a brief report on the performance of candidates to their Team Leader (Supervisor) via email by the end of the marking period. The report should contain notes on particular strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

10. For answers marked by levels of response:

Read through the whole answer from start to finish, concentrating on features that make it a stronger or weaker answer using the indicative scientific content as guidance. The indicative scientific content indicates the expected parameters for candidates' answers, but be prepared to recognise and credit unexpected approaches where they show relevance.

Using a 'best-fit' approach based on the science content of the answer, first decide which set of level descriptors, Level 1, Level 2 or Level 3, **best** describes the overall quality of the answer using the guidelines described in the level descriptors in the mark scheme.

Once the level is located, award the higher or lower mark.

The higher mark should be awarded where the level descriptor has been evidenced and all aspects of the communication statement (in *italics*) have been met.

The lower mark should be awarded where the level descriptor has been evidenced but aspects of the communication statement (in *italics*) are missing.

In summary:

- **The science content determines the level.**
- **The communication statement determines the mark within a level.**

There are no Level of Response marked questions in this paper.

11. Annotations

Annotation	Meaning
DO NOT ALLOW	Answers that are not worthy of credit
IGNORE	Statements that are irrelevant
ALLOW	Answers that can be accepted
()	Words that are not essential to gain credit
—	Underlined words must be present in answer to score a mark
ECF	Error carried forward
AW	Alternative wording
ORA	Or reverse argument

12. Subject-specific Marking Instructions

INTRODUCTION

Your first task as an Examiner is to become thoroughly familiar with the material on which the examination depends. This material includes:

- the specification, especially the assessment objectives
- the question paper
- the mark scheme.

You should ensure that you have copies of these materials.

You should ensure also that you are familiar with the administrative procedures related to the marking process. These are set out in the OCR booklet **Instructions for Examiners**. If you are examining for the first time, please read carefully **Appendix 5 Introduction to Script Marking: Notes for New Examiners**.

Please ask for help or guidance whenever you need it. Your first point of contact is your Team Leader.

Question			Answer	Marks	Guidance
1			C ✓	1	
2			D ✓	1	
3			D ✓	1	
4			A ✓	1	
5			A ✓	1	
6			A ✓	1	
7			D ✓	1	
8			D ✓	1	
9			B ✓	1	
10			A ✓	1	
11			C ✓	1	
12			A ✓	1	
13			C ✓	1	
14			D ✓	1	
15			A ✓	1	
16			D ✓	1	
17			D ✓	1	
18			D ✓	1	
19			C ✓	1	
20			C ✓	1	
			Total	20	

Question			Answer	Marks	Guidance
21	(a)		tunica intima ✓ OR endothelium ✓	1	ALLOW tunica interna
	(b)		0.15 ± 0.05 ✓✓✓	3	<i>If incorrect answer given</i> ALLOW 1 mark for calculating artery lumen ÷ vein lumen ALLOW 1 mark for correctly calculating artery or vein cross section <i>Max 2 if answer is given to more than 4 significant figures</i>
	(c)		(in arteries) small lumen <u>maintains</u> pressure ✓ (in veins) low resistance / friction needed because of , low pressure / slow flow ✓ <i>further detail</i> <i>idea that</i> same flow rate is achieved by having a larger volume / cross sectional area ✓ <i>idea that</i> large cross section compared to circumference means fewer particles colliding with wall / low friction / less resistance ✓	3	ALLOW <i>idea that</i> small volume compared to wall surface means molecules in blood more likely to collide with wall
	(d)		<i>Name</i> amino acid ✓ <i>Joined by</i> peptide , bond / link ✓ between amine group and carboxyl group (of different amino acid) ✓ condensation / water is produced ✓	3	ALLOW amino group
			Total	10	

Question			Answer	Marks	Guidance
22	(a)		detect the presence of acid / H^+ ✓ measure end-point / dependent variable ✓	1	
	(b)	(i)	surface area to volume ratio on x-axis and time on y-axis ✓ plotted points occupy at least half of available area and linear scale on both axes and line of best fit drawn ✓ axes labelled time (min) and surface area to volume ratio / AW ✓ all points plotted correctly (to +/- half a 2 mm grid square) ✓	4	DO NOT ALLOW if units given for x-axis ALLOW ecf for correctly plotted points on incorrectly-scaled graph
		(ii)	time taken for diffusion (to centre of cube) , increases as surface area to volume ratio decreases, ORA ✓	1	Answer must mention surface area to volume ratio DO NOT ALLOW if colour change is discussed in place of diffusion IGNORE rate ALLOW a description consistent with the graph the candidate has drawn
		(iii)	0.44 ✓	1	ALLOW answer in the range of 0.40 – 0.48 depending on candidate's plotted graph Answer must be reported to 2 decimal places
		(iv)	test cubes of (known) length between 10 and 20 mm ✓	1	
	(c)		0.35 / 0.347 ✓✓	3	ALLOW 0.69 / 0.694 for 1 mark ALLOW 0.3 or 0.3472 for 1 mark

Question			Answer	Marks	Guidance
			mm min ⁻¹ ✓		ALLOW mm/min
	(d)	(i)	<i>cube A, because...</i> time for test 2 different from others ✓ use of processed figures to support ✓	2	ALLOW calculated rates for cube A - E ALLOW calculated range compared with that of cubes B - E
		(ii)	<i>Limitation</i> inconsistency in surface area ✓ cube A ✓ <i>Because</i> It is the smallest cube so small error in cutting will have proportionately larger effect in a small cube / <i>idea that</i> error is a bigger proportion of total time ✓ <i>Limitation</i> using human eye and judgement to determine end point ✓ cube E ✓ <i>Because</i> largest cube so harder to see through 2cm of jelly / AW ✓	3	ALLOW mark only if one of the other two marks is awarded ALLOW mark only if one of the other two marks is awarded
	(e)		<i>idea of</i> involvement of cytoskeleton / vesicles ✓	1	IGNORE reference to different diffusion resistance
			Total	17	

Question			Answer	Marks	Guidance
23	(a)		lateral movement of water ✓	1	
	(b)		<i>Type of cell</i> stem (cells) ✓ <i>Description - any three from,</i> by differentiation ✓ (cell) elongation ✓ deposition of lignin / lignification (of cell walls) ✓ end walls break down ✓	4	
	(c)		<i>idea of</i> long distance from external surface to cells ✓ small surface area to volume ratio ✓ <u>diffusion</u> not fast enough ✓ named example of substance that is transported e.g. sucrose ✓	3	ALLOW from source to sink / root to leaf etc.
	(d)		no / thin , (waxy) cuticle and <i>idea that</i> wax production is a waste ✓ large surface area to , increase / maximise , photosynthesis , as transpiration is not an issue ✓ many stomata to , increase / maximise , gas exchange ✓ stomata on the top surface , as gas concentration is higher in air than water ✓	2	ALLOW stomata do not close at night to maximise gas exchange
			Total	10	

Question			Answer	Marks	Guidance
24	(a)	(i)	chloroplast ✓	1	
		(ii)	<i>idea that</i> presence of water may have altered the RF ✓	1	ALLOW too diluted
	(b)	(i)	<i>Rf</i> is 0.61 ✓	1	ALLOW 0.60 or 0.62 DO NOT ALLOW 0.6
		(ii)	<i>does not support because</i> calculated <i>Rf</i> is not 0.63 ✓ <i>supports because</i> within range of experimental variability ✓ other <i>Rf</i> values appear to be slightly low ✓ correct ranking position on chromatogram ✓ colour is blue/green ✓	3	
			Total	6	

Question			Answer	Marks	Guidance
25	(a)		1.5 ✓✓	2	If answer is incorrect ALLOW one mark for clear attempt to calculate gradient of a tangent to the line ALLOW 1.47 ± 0.02 for two marks
	(b)		<p><i>Max 2 if the idea of parts of the vaccination response taking time is not explicitly stated.</i></p> <p><i>vaccination involves</i> clonal selection / antigen presentation ✓ clonal expansion / proliferation ✓ differentiation ✓</p> <p>memory cells already present in response to infection ✓</p>	3	ALLOW primary response for vaccination ALLOW secondary response for response to infection
	(c)		<p>increase likelihood of phagocytosis ✓</p> <p><i>idea that binds to pathogen and phagocyte / macrophage</i> ✓</p>	2	
			Total	7	

PRACTICE