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A LEVEL

Examiners' report

BIOLOGY A

H420

For first teaching in 2015

H420/01 Autumn 2021 series

Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

	Reports for the November 2021 series will provide a broad commentary about candidate performance, with the aim for them to be useful future teaching tools. As an exception for this series they will not contain any questions from the question paper nor examples of candidate responses.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

A full copy of the question paper and the mark scheme can be downloaded from OCR.

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Paper 1 series overview

H420/01 is one of three components of the GCE A Level Biology A specification assessed during this examination session. For H420/01 candidates needed to demonstrate breadth and depth of knowledge across modules 1, 2, 3 and 5 with 15 multiple choice and two level of response (LoR) questions included in the 100 marks.

- There was no change in demand of the question paper covering all three assessment objectives (AO1, AO2 and AO3).
- Questions were of similar style with the usual practical and mathematical themes embedded within the question paper that appeared to be accessible to candidates across the ability range.
- There was no evidence to suggest that candidates were under any time constraints towards the end of the paper.

Candidates who did well on this paper generally did the following:	***Candidates who did less well on this paper generally did the following:***
• attempted all questions in both sections **A** and **B** • maintained focus in multiple choice questions without being distracted by alternative options • were able to apply knowledge to novel context • read carefully the information provided in, for example, figures, tables and practical methodology to formulate an appropriate response • demonstrated good mathematical skills, including the ability to analyse and evaluate data • were able to interpret photomicrographs and respond appropriately • gave succinct responses in LoR style questions • interpreted command words correctly to formulate a response such as 'evaluate'.	• demonstrated recall of facts, but appeared unable to apply knowledge appropriately • gave extended responses which did not answer the question being asked • confused tissues and structures shown in photomicrographs • described rather than 'explained' or 'evaluated'.

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Section overview

As in previous years, Section **A** of the examination consisted of fifteen multiple choice questions covering a range of topics across the assessed modules for this component. Only **AO1** and **AO2** were assessed with a range of questions some involving recall; others requiring the need to demonstrate knowledge of PAGs e.g. **Q14** use of respirometer and/or analytical skills. Some questions needed more time than others. In this series, none of the questions in Section **A** assessed mathematical skills directly.

Mathematical and practical skills were embedded throughout the structured questions in Section **B**. Assessment objectives **AO1**, **AO2** and **AO3** were addressed throughout **Q16** to **Q21** with concepts from across the appropriate modules of the specification including histology, control of heart rate, control of blood glucose, diabetes and plant themed questions involving the Hill reaction of photosynthesis and transport mechanisms in plants.

Themes in candidate responses

Generally, if candidates were able to understand the command word and use the information provided in, e.g., a data table, they went on to provide good responses throughout the question.

There was some evidence that practical skills were not as well developed as in previous sessions, demonstrated by the fact that interpreting photomicrographs of the pancreas and the liver (on the INSERT) in **Q17** and Q**18** proved challenging.

Comments on responses by question type

Multiple choice questions

Most candidates attempted all fifteen questions. The statement-style MCQs proved more challenging. For example, in **Q13**, candidates who achieved the correct response needed to read the statements carefully and apply their knowledge of molecules involved in cellular respiration. There were no misconceptions evident in Section **A.**

	**AfL**	The rubric remains the same for options **A** to **D** in statement-style multiple choice questions. This is shown below: **A** 1, 2 and 3 are correct **B** only 1 and 2 are correct **C** only 2 and 3 are correct **D** only 1 is correct Candidates are encouraged to read **all** statements carefully before choosing their response.

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Level of response questions

There were two level of response questions, **Q17 (c)** and Q**20 (e)** both worth 6 marks. This style of questioning requires succinct responses.

Q17 (c) required candidates to evaluate treatments for diabetes, both past and potential.

Most candidates correctly identified insulin as a treatment to achieve a levelled response. Good responses were those that also demonstrated knowledge of different sources of insulin, e.g. from animals; future treatments such as transplants and stem cell technology **and** could also demonstrate advantages and disadvantages of such treatments.

The main issue for some candidates was understanding the command word 'evaluate' - they described treatments without comparing respective advantages and disadvantages.

For **Q20 (e)** good Level 3 responses demonstrated excellent knowledge of translocation and used correct terminology to describe mass flow including loading and unloading of sucrose in phloem.

It was common for candidates to explain phloem loading at the source in detail but then omitted details on what happens at the sink.

	AfL	As seen in previous sessions and here in **Q17 (c)**, candidates still find writing an evaluation challenging. Centres could offer exemplars and advice on how to formulate responses to questions where they have to argue 'For and Against' with supporting evidence for their argument.

Other

Questions assessing knowledge of mammalian histology i.e. **Q17(a)** and **Q18(a)** were not well answered. Although most could identify the islets of Langerhans in the pancreas, many appeared undecided about what they should see under a microscope. There was confusion between the pancreas and the liver, and some responses included reference to the kidney which was not being assessed.

It is encouraging to see that candidates continue to perform well in questions that require the choice of correct terms to complete sentences or tables such as, in **Q18 (b)** about enzyme structure and function**.**

Practical skills involving the Hill reaction and photosynthesis were assessed in **Q19**. Many candidates found drawing conclusions from data and suggesting improvements to the method particularly challenging.

	AfL	Refer to OCR practical skills handbook and PAGs for support with practical demands of the specification.

In **Q20 (c)(ii),** the calculation of rate was not well answered**.** Although the calculation has been assessed in previous sessions, it was necessary for candidates to convert mm^3 to cm^3 and then give their response in standard form. Most candidates did not provide a correct response; some were able to perform the correct calculation to achieve one mark, but few knew how to convert 0.049 into the correct standard form response of 4.9×10^{-2}.

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	**AfL**	Refer to OCR mathematical skills handbook for examples of converting units and providing responses in standard form.

Common misconceptions

In **Q20 (e)** it was a common misconception for candidates to discuss the movement of glucose through phloem rather than sucrose.

	**Misconception**	Candidates should be aware that before transport, glucose made in the leaves is converted to sucrose.

Key teaching and learning points – comments on improving performance

It is advantageous to complete practical investigations in the classroom and to observe microscope slides or study photomicrographs. Although this has been particularly challenging for centres this session. Use of video clips to consolidate learning in the classroom and the use of OCR delivery guides and support handbooks would be recommended.

	**OCR support**	For support with practical activities on the OCR qualification webpage, a PAG support guide and a practical skills handbook are available and can be found using the following links:
	**OCR support**	For support with mathematical skills an updated maths skills handbook is available.

Guidance on using this paper as a mock

This question paper has a variety of question styles and includes questions that can be accessed by candidates across the ability range. It includes questions with both plant and mammalian themes. The range of mathematical and practical skills embedded in this question paper are good for identifying strengths and weaknesses of candidates in these areas.

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