

**A LEVEL**

**Examiners' report**

# **PHYSICS A**

**H556**

For first teaching in 2015

**H556/01 Autumn 2020 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 Autumn 2020 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 exam 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 exam paper and the mark scheme can be downloaded from OCR.

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## Paper 1 series overview

H556/01 is one of the 3 examination components for the revised A Level examination. The scope of this paper is modules 1, 2, 3 and 5 from the specification. The style, content and difficulty of the paper was in keeping with those of previous summer series. The paper is worth 100 marks and is split into two sections. Section A contains 15 multiple choice questions (MCQs) and allows the breadth coverage of the specification. Section B includes short-answer style questions, two Level of Response (LoR) questions, problem solving, calculations and practical.

<i>Candidates who did well on this paper generally did the following:</i>	<i>Candidates who did less well on this paper generally did the following:</i>
<ul style="list-style-type: none"> <li>• Made their working in calculations clear.</li> <li>• Showed each step in 'show that' questions carefully.</li> <li>• Made clear which instruments would be used in investigations.</li> <li>• Explained what they would do with data taken in investigations clearly. This would often be in the form of a graph, stating what the graph would show and how the gradient and/or the y-intercept of that graph was relevant to the investigation.</li> <li>• Used the data and relationships book wisely.</li> <li>• Worked through the multiple choice questions logically having removed unlikely responses first.</li> <li>• Remembered definitions of important terms and could reproduce them correctly.</li> <li>• Performed calculator operations accurately.</li> </ul>	<ul style="list-style-type: none"> <li>• Showed their thinking in a disorganised way.</li> <li>• Forgot ideas about how investigative work is performed and reported.</li> <li>• Muddled trigonometric functions.</li> <li>• Accidentally used degrees or radians in their calculators.</li> <li>• Forgot some aspects of GCSE Physics, such as ideas about resultant force and conservation of momentum.</li> <li>• Used the data and relationships book sparingly if at all.</li> <li>• Misread the question.</li> </ul>

## Comments on responses by question type

### Multiple choice questions

Section A consists of 15 multiple choice questions. Candidates had particular difficulty with Question 9 and Question 10. Candidates found Question 1, Question 2 and Question 15 very straightforward.

### Level of response questions

Both Level of Response questions tested ideas about investigative experiments. There was a solid focus on elements of data-taking and instruments that should be used. Data analysis was better than in previous series for the equivalent to Question 19. Question 17b was more challenging in this respect, as to get the correct answer for the specific latent heat, the candidate needed to understand the significance of the control apparatus.

### Other

Calculations remain a good source of marks to well-practised candidates.

### Common misconceptions

In Question 24a, a reasonably large fraction of candidates believed that the Sun would eventually undergo a supernova stage, mixing up the evolutions of small mass stars and those stars of significantly larger mass. In Question 23c, candidates assumed that the gravitational field strength was constant throughout the distance moved by the probe. Some candidates used degrees centigrade rather than kelvin as the unit of temperature for Question 21.

### Key teaching and learning points – comments on improving performance

Both LoR questions would provide an excellent teaching and learning opportunity as potential classroom investigations. Definitions should be learned carefully in preparation for examinations. Question 23c showed that candidates were unfamiliar with the idea of finding a difference in potentials between two points in order to find the change in potential energy.

### Guidance on using this paper as a mock

This paper would make for a successful, challenging mock. If the order of teaching is determined by the order of topics in the specification, this paper could be used almost in its entirety before the Easter vacation.

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## Supporting you through 2020-2021

Our priority is supporting you and your students this autumn and to support you as you prepare for summer 2021 exams. We'll update our [website information](#) regularly with resources, guidance and key information.

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