

# **GCSE, AS and A Level Electronics**

Consultation on Conditions and guidance



February 2016

Ofqual/16/5836

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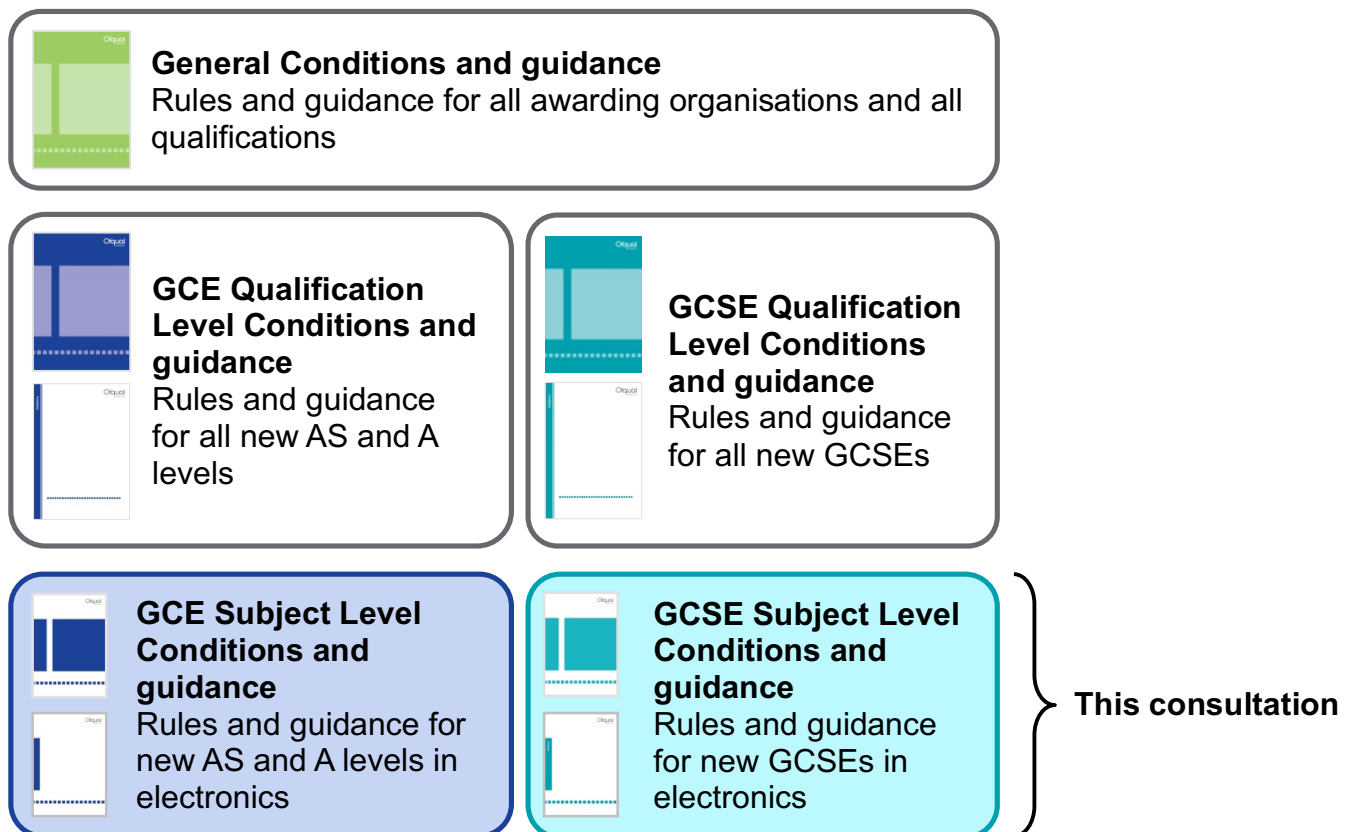
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## Introduction

- 1.1 As most readers will know, changes are being made to GCSEs, AS and A levels taken by students in England. New GCSE, AS and A level qualifications in electronics will be taught in schools from September 2017.
- 1.2 The Department for Education (DfE) published the subject content for GCSE<sup>1</sup>, AS and A level<sup>2</sup> electronics in February 2016.
- 1.3 Following our own consultation on assessment arrangements for these subjects, we confirmed<sup>3</sup> in February 2016 that new GCSEs, AS and A levels in electronics will be assessed through 20 per cent non-exam assessment and 80 per cent assessment by examination and will not be tiered.
- 1.4 We also confirmed the assessment objectives for GCSE, AS and A level electronics.

### Scope of this consultation



<sup>1</sup> [www.gov.uk/government/publications/gcse-electronics](http://www.gov.uk/government/publications/gcse-electronics)

<sup>2</sup> [www.gov.uk/government/publications/gce-as-and-a-level-electronics](http://www.gov.uk/government/publications/gce-as-and-a-level-electronics)

<sup>3</sup> [www.gov.uk/government/consultations/developing-new-gcse-as-and-a-levels-for-first-teaching-in-2017](http://www.gov.uk/government/consultations/developing-new-gcse-as-and-a-levels-for-first-teaching-in-2017)

- 1.5 This consultation builds on our – and DfE’s – earlier decisions. It seeks views on the subject-specific rules and guidance we should put in place for GCSE, AS and A level electronics.
- 1.6 As explained in Appendix A, and illustrated in the figure above, these new rules and guidance will sit alongside our existing rules and guidance for
- all qualifications,<sup>4</sup>
  - all new GCSE qualifications,<sup>5</sup> and
  - all new AS and A level qualifications.<sup>6</sup>
- 1.7 This document sets out, and seeks views on:
- our proposed approach to regulating new GCSEs, AS and A levels in electronics; and
  - the subject-specific Conditions, requirements and guidance we propose to introduce to implement that approach.

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<sup>4</sup> [www.gov.uk/guidance/awarding-organisations-understanding-our-regulatory-requirements#requirements-for-all-awarding-organisations-and-all-regulated-qualifications](http://www.gov.uk/guidance/awarding-organisations-understanding-our-regulatory-requirements#requirements-for-all-awarding-organisations-and-all-regulated-qualifications)

<sup>5</sup> [www.gov.uk/government/collections/gcse-9-to-1-requirements-and-guidance](http://www.gov.uk/government/collections/gcse-9-to-1-requirements-and-guidance)

<sup>6</sup> [www.gov.uk/government/collections/new-a-level-and-as-level-qualifications-requirements-and-guidance](http://www.gov.uk/government/collections/new-a-level-and-as-level-qualifications-requirements-and-guidance)

## How to respond to this consultation

The closing date for responses is **18 March 2016**.

Please respond to this consultation in one of three ways:

- Complete the online response at <https://www.surveymzmo.com/s3/2605624/GCSE-AS-and-A-level-reform-regulations-for-electronics>
- Complete the consultation questions at the end of this document and email your response to [consultations@ofqual.gov.uk](mailto:consultations@ofqual.gov.uk). Please include the consultation title (Electronics Consultation 2016) in the subject line of the email and make clear who you are and in what capacity you are responding
- Post your response to: Electronics Consultation 2016, Ofqual, Spring Place, Herald Avenue, Coventry, CV5 6UB, making clear who you are and in what capacity you are responding

## Evaluating the responses

To evaluate responses properly, we need to know who is responding to the consultation and in what capacity. We will therefore only consider your response if you complete the information page.

Any personal data (such as your name, address and any other identifying information) will be processed in accordance with the Data Protection Act 1998 and our standard terms and conditions.

We will publish our evaluation of responses. Please note that we may publish all or part of your response unless you tell us (in your answer to the confidentiality question) that you want us to treat your response as confidential. If you tell us you wish your response to be treated as confidential, we will not include your details in any published list of respondents, although we may quote from your response anonymously.

Please respond by **18 March 2016**.

## Regulating GCSE, AS and A level electronics

### Compliance with subject content and assessment objectives

- 2.1 As we explained in paragraph 1.2, DfE has published the subject content for new GCSEs<sup>7</sup>, AS and A levels<sup>8</sup> in electronics.
- 2.2 One of the ways we ensure new GCSEs, AS and A levels are comparable across exam boards is by requiring them to be in line with the relevant subject content and our assessment objectives.
- 2.3 The approach we have taken in every other new GCSE, AS and A level qualification is to introduce subject-specific Conditions which:
- require exam boards to comply with the requirements of the subject content (and have regard to any guidance within the subject content); and
  - require exam boards to comply with our assessment objectives (and have regard to our guidance on those assessment objectives).
- 2.4 In all other subjects this Condition includes a provision which requires exam boards to interpret the subject content in line with any rules we set and to have regard to any guidance we publish. Although we do not always specify how the subject content should be interpreted, we think it is important for us to be able to do so when there is a good reason for that (for example, if a different interpretation could compromise qualification standards or comparability).
- 2.5 We see no reason to take a different approach for electronics. We are therefore proposing that we should introduce a Condition which requires exam boards to:
- comply with the requirements (and have regard to any guidance) set out in the subject content – this includes requirements and guidance in the proposed new appendices;
  - comply with any requirements (and have regard to any guidance) we publish on interpreting the subject content; and
  - comply with our assessment objectives (and have regard to our guidance on those assessment objectives).

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<sup>7</sup> [www.gov.uk/government/publications/gcse-electronics](http://www.gov.uk/government/publications/gcse-electronics)

<sup>8</sup> [www.gov.uk/government/publications/gce-as-and-a-level-electronics](http://www.gov.uk/government/publications/gce-as-and-a-level-electronics)

**Question 1: To what extent do you agree or disagree that we should introduce a Condition which requires exam boards to comply with the relevant subject content and assessment objectives?**

### **Guidance on assessment objectives**

- 2.6 For all other new GCSE, AS and A level qualifications, we have published guidance which explains how exam boards should interpret our assessment objectives. This is designed to ensure exam boards have a common understanding of – and take a consistent approach to targeting – the different assessment objectives.
- 2.7 We are proposing we should introduce similar guidance for GCSE, AS and A level electronics.

**Question 2: To what extent do you agree or disagree that we should introduce guidance which clarifies how exam boards should interpret our assessment objectives?**

### **Rules and guidance for exam assessment**

- 2.8 In a number of other new GCSE, AS and A level subjects, we have specified rules which cover how specific areas of the subject content should be assessed. We normally do this where we think it is important exam boards take a consistent and comparable approach to assessing an area of content (in terms of the weighting assigned to that content area and/or the types of question used to target it).
- 2.9 For example, the subject content for the new science GCSEs, AS and A levels which have been developed for first teaching from September 2015 and September 2016 includes:
- mathematical skills that students should be able to demonstrate; and
  - practical skills that should be indirectly assessed in exams.
- 2.10 In these subjects, either we or the DfE have set minimum proportions of exam marks which must be allocated to these content areas, and we have specified further rules around how they should be assessed.
- 2.11 The subject content for GCSE, AS and A level electronics includes specified mathematical skills which students must be able to use.
- 2.12 For electronics, we believe we should take a similar approach to regulating exam assessments as we have in other subjects. So we are proposing to introduce



rules so that exam boards take a consistent approach to assessing mathematical skills in GCSE, AS and A level electronics.

**Question 3: To what extent do you agree or disagree that we should introduce rules for exam assessment to ensure exam boards take a consistent approach to assessing mathematical skills in GCSE, AS and A level electronics?**

### Assessing mathematical skills in exams

2.13 The subject content requirements for electronics specify the mathematical skills that students taking GCSE, AS and A level electronics should be able to use and apply.

2.14 We want to make sure that all exam boards take a consistent approach to assessing students' mathematical skills. We also want to make sure that mathematical skills are assessed in a way which is appropriate to the subject. In particular, we want to make sure that:

- mathematical skills are assessed at a comparable level of demand across exam boards;
- mathematical skills are assessed in the context of other areas of the subject content (and not in isolation); and
- students across the ability range have opportunities to access marks for mathematical skills (and these marks are not simply targeted at higher or lower ability candidates).

2.15 To do this, we are proposing to set rules which require exam boards to:

- assess mathematical skills in the context of other areas of the subject content, and not in isolation;
- allocate at least:
  - 20 per cent of the marks for the qualification at GCSE to rewarding use of mathematical skills at a level of demand which is at least equivalent to Key Stage 3; and
  - 30 per cent of the marks for the qualification at AS and A level to rewarding use of mathematical skills at a level of demand which is at least equivalent to higher tier GCSE mathematics;
- assess mathematical skills across a range of levels of demand which supports effective differentiation between candidates.

**Question 4: To what extent do you agree or disagree with our proposed approach to assessing mathematical skills in exams for GCSE, AS and A level electronics?**

## **Non-exam assessment**

2.16 As we have explained in previous consultations,<sup>9</sup> it is generally more difficult to ensure reliability in non-exam assessments. As a result, we have only permitted non-exam assessment in subjects where part of the subject content cannot be validly assessed through an exam.

2.17 Because it can be difficult to ensure reliability in non-exam assessments, we aim to ensure that exam boards take as consistent an approach as possible to non-exam assessment. This includes – where appropriate – specifying:

- what should be assessed (for example, the relevant parts of the subject content and/or assessment objectives); and
- how that should be assessed (for example, the nature of the tasks students should carry out, and how those tasks should be set and marked).

2.18 In GCSE, AS and A level electronics, we have identified elements of the subject content which cannot be validly assessed by an exam. That is why we have previously decided that GCSE, AS and A level electronics should include 20 per cent non-exam assessment.

2.19 To implement these decisions, we are proposing to introduce a subject-specific Condition for GCSE, AS and A level electronics. This Condition will permit non-exam assessment, specify the appropriate proportion of exam and non-exam assessment, and allow us to set more detailed rules and guidance on non-exam assessment.

**Question 5: To what extent do you agree or disagree that we should introduce a Condition which permits non-exam assessment, specifies the proportion of exam- and non-exam assessment, and allows us to set more detailed rules and guidance on non-exam assessment?**

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<sup>9</sup> See, for example, <http://webarchive.nationalarchives.gov.uk/20141031163546/http://comment.ofqual.gov.uk/gcse-reform-june-2013/>

2.20 In line with our overall approach to non-exam assessment, we are also proposing to set more detailed rules for non-exam assessment in each subject; we discuss these separately below.

### **Non-exam assessment tasks in GCSE, AS and A level electronics**

2.21 The subject content for GCSE, AS and A level electronics identifies electronics skills which students will need to demonstrate. The skills that students are required to demonstrate are reflected in our assessment objectives. Assessment objective AO3 requires students to be able to “*Analyse problems and design, build, test and evaluate electronic systems to address identified needs*”. Our view is that parts of this assessment objective could only be assessed through non-exam assessment. We are proposing that all of the marks for non-exam assessment should be allocated to AO3.

**Question 6: To what extent do you agree or disagree with our proposed approach to allocating non-exam assessment marks to assessment objectives in GCSE, AS and A level electronics?**

2.22 We propose to allow non-exam assessment tasks for GCSE, AS and A level electronics to be set by the exam board, by a centre, or by a student in agreement with their centre.

2.23 Given the likely nature of the tasks, different approaches may be more appropriate in one task than another. For example, the subject content requires students to develop and learn how to apply observational, practical, problem-solving and evaluative skills in the identification of needs in the world around them. Requiring all tasks to be set by the exam board may limit the extent to which this can be achieved. There are other skills however, where allowing centres to set the task themselves could risk allowing assessments to become predictable. For example, it may be possible for centres to set assessments which overly focus on digital or analogue circuits. So in these instances, it may be more appropriate for exam boards to set tasks.

2.24 We judge that exam boards are best placed to determine their approach, based on the non-exam assessment they propose. We believe an exam board should determine the most suitable approach, demonstrating that it identifies and manages any risks associated with that approach.

**Question 7: To what extent do you agree or disagree with our proposed approach to setting non-exam assessment tasks in GCSE, AS and A level electronics?**

### **Authenticating non-exam assessment tasks in GCSE, AS and A level electronics**

2.25 Whenever non-exam assessment is used, it creates particular challenges for exam boards around authentication and marking of students' work.

2.26 The challenges around authentication arise because non-exam assessment takes place over an extended period of time, which can make it harder for teachers to be sure that students have not received help with their work.

2.27 It is exam boards' responsibility to ensure they put in place appropriate arrangements which enable them to authenticate students' work. This is required by our *General Conditions of Recognition*, but we have also put in place specific rules in a number of other subjects which require non-exam assessment to take place under conditions set by the exam board which ensure that students' work can be authenticated.

2.28 We are proposing to put in place a similar rule in GCSE, AS and A level electronics. However, we also think we need to put in place further rules about authenticating students' work on any electronic system that they build.

2.29 We think that the only way teachers can authenticate a student's electronic system is if they have been able to observe the student producing it. So we are proposing to put in place a rule which requires students to produce any electronic system while under supervision.

2.30 To do this, we are proposing to make use of the defined term 'Immediate Guidance or Supervision' from our *General Conditions of Recognition*. This would permit teachers to supervise students' work remotely (for example using video chat) as well as directly, but we think that this is acceptable for authentication purposes. Of course, there may be other reasons (for example in relation to health and safety) why exam boards or schools might choose not to allow remote supervision.

**Question 8: To what extent do you agree or disagree with our proposed approach to authenticating non-exam assessment in GCSE, AS and A level electronics?**

### **Marking of non-exam assessment tasks in GCSE, AS and A level electronics**

2.31 There are two main challenges around marking non-exam assessment in electronics.

2.32 The first challenge is the need to ensure that there is sufficient evidence to enable assessors to judge whether (and how well) students have demonstrated the required knowledge, skills and understanding.

2.33 While some of the knowledge, skills and understanding specified in the subject content can be assessed directly (or at least inferred) from the finished electronic system, others (for example changes made as a result of testing during the design and building of the electronic system) cannot.

2.34 At GCSE, the subject content requires students to:

- undertake a single extended system design and construction task.

2.35 We are therefore proposing to set rules which ensure that non-exam assessment tasks require students to produce at GCSE:

- a design brief developed in response to a problem;
- an electronic system which is based on that design brief; and
- any other evidence that the exam board specifies which will enable it to determine the extent to which the student has demonstrated the skills being assessed.

2.36 For AS and A level, the content requires the non-exam assessment task to require students to undertake development and testing tasks:

- at AS, students will undertake tasks that assess all of the electronics skills in the subject content and include working with both digital and analogue circuits; and
- at A level students will undertake tasks that assess all of the electronics skills in the subject content, working with both digital and analogue sub – systems, including a system development task.

2.37 As the content for AS and A level allows for more than one task, it is possible that the evidence might not always be an electronic system. For example when assessing the testing of electronic systems, the evidence could be a report or the output of a test. We are therefore proposing to set rules which ensure that non-exam assessment tasks require students to produce at AS and A level:

- any evidence that the exam board specifies which will enable it to determine the extent to which the student has demonstrated the skills being assessed.

2.38 We have deliberately chosen not to specify the form which any additional evidence must take. This is because we want to give exam boards freedom to innovate, and develop approaches which suit their approach to assessment and meet the needs of schools. We are particularly keen to encourage exam boards to consider alternatives to the traditional portfolio-based approach to

assessment, which both schools and exam boards have told us has become increasingly burdensome over time.

- 2.39 The second challenge around marking non-exam assessment is largely a logistical one. Marking non-exam assessment in electronics necessarily involves appraising the electronic system or other evidence the student has produced. The nature of the electronic systems students produce, and the fact that for resource reasons, schools may use re-usable breadboards, means that it is difficult for exam boards to always mark non-exam assessment themselves. That said, we would not want to prevent an exam board from marking non-exam assessments itself if it had a way of doing so.
- 2.40 As a result, we are proposing to allow non-exam assessment in electronics to be marked by teachers within schools (and moderated by exam boards), by the exam boards themselves, or by a combination of the two.
- 2.41 All of these different approaches to marking non-exam assessment have their strengths and weaknesses. Whichever approach an exam board chooses to take, our *General Conditions of Recognition* require it to identify the risks associated with that approach, and to mitigate those risks. We are therefore proposing that exam boards must set out in their assessment strategies how they will manage the particular risks that their approach to non-exam assessment entails.

**Question 9: To what extent do you agree or disagree with our proposed approach to marking of non-exam assessment in GCSE, AS and A level electronics?**

## Our proposed Conditions, requirements and guidance for GCSE Electronics

3.1 As set out above, we are proposing to introduce subject-specific Conditions, requirements and guidance to implement the proposals in this consultation. We set out our proposed Conditions, requirements and guidance below.

### Proposed Conditions and requirements for GCSE electronics

3.2 We are proposing to introduce the following Conditions and requirements which will apply to all new GCSE qualifications in electronics:

- a Condition covering compliance with subject content and assessment objectives;
- a further Condition which permits non-exam assessment, specifies the percentage of exam and non-exam assessment, and allows us to set more detailed rules and guidance for non-exam assessment;
- our assessment objectives;
- requirements for assessments which cover assessment of mathematical skills; and
- requirements for non-exam assessments.

<b>Condition</b>	<b>Compliance with content requirements</b>
<b>GCSE(Electronics)1</b>	
GCSE(Electronics)1.1	<p>In respect of each GCSE Qualification in Electronics which it makes available, or proposes to make available, an awarding organisation must –</p> <ul style="list-style-type: none"><li>(a) comply with the requirements relating to that qualification set out in the document published by the Secretary of State entitled ‘Electronics GCSE subject content’<sup>10</sup>, document reference DFE-00039-2016,</li><li>(b) have regard to any recommendations or guidelines relating to that qualification set out in that document, and</li></ul>

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<sup>10</sup> [www.gov.uk/government/publications/gcse-electronics](http://www.gov.uk/government/publications/gcse-electronics)

	(c) interpret that document in accordance with any requirements, and having regard to any guidance, which may be published by Ofqual and revised from time to time.
GCSE(Electronics)1.2	In respect of each GCSE Qualification in Electronics which it makes available, or proposes to make available, an awarding organisation must comply with any requirements, and have regard to any guidance, relating to the objectives to be met by any assessment for that qualification which may be published by Ofqual and revised from time to time.
<b>Condition</b>	<b>Assessment</b>
<b>GCSE(Electronics)2</b>	
GCSE(Electronics)2.1	Condition GCSE4.1 does not apply to any GCSE Qualification in Electronics which an awarding organisation makes available or proposes to make available.
GCSE(Electronics)2.2	In respect of the total marks available for a GCSE Qualification in Electronics which it makes available, an awarding organisation must ensure that –  (a) 80 per cent of those marks are made available through Assessments by Examination, and (b) 20 per cent of those marks are made available through assessments that are not Assessments by Examination.
GCSE(Electronics)2.3	An awarding organisation must ensure that in respect of each assessment for a GCSE Qualification in Electronics which it makes available it complies with any requirements, and has regard to any guidance, which may be published by Ofqual and revised from time to time.
<b>Assessment objectives – GCSE Qualifications in Electronics</b>	
Condition GCSE(Electronics)1.2 allows us to specify requirements relating to the objectives to be met by any assessment for GCSE Qualifications in Electronics.	
The assessment objectives set out below constitute requirements for the purposes of Condition GCSE(Electronics)1.2. Awarding organisations must	



comply with these requirements in relation to all GCSE Qualifications in Electronics they make available.

	Objective	Weighting
AO1	Demonstrate knowledge and understanding of the ideas, techniques and procedures of electronics	35%
AO2	Apply knowledge and understanding of the ideas, techniques and procedures of electronics	35%
AO3	Analyse problems and design, build, test and evaluate electronic systems to address identified needs	30%

## **Assessment requirements – GCSE Qualifications in Electronics**

Condition GCSE(Electronics)2.1 allows us to specify requirements in relation to assessments for GCSE Qualifications in Electronics.

We set out below our requirements for the purposes of Condition GCSE(Electronics)2.1. Awarding organisations must comply with these requirements in relation to all GCSE Qualifications in Electronics they make available.

### **Mathematical skills**

The subject content for GCSE Qualifications in Electronics is set out in the document published by the Secretary of State entitled 'Electronics GCSE subject content', document reference DFE-00039-2016 (the 'Content Document').

The Content Document sets out the mathematical skills and knowledge which must form part of each GCSE Qualification in Electronics ('Mathematical Skills') in the 'Use of Mathematics' sections, individual content statements and Appendix 3.

In designing and setting the Assessments by Examination for a GCSE Qualification in Electronics which it makes available, or proposes to make available, an awarding organisation must ensure that –

- (a) questions and tasks rewarding the use of Mathematical Skills assess those skills within the context of other areas of the subject content, and not in isolation,
- (b) at least 20 per cent of the total marks for the qualification reward the use of Mathematical Skills at a Level of Demand which is not lower than that which is expected of Learners at Key Stage 3 as outlined in the Department for Education's document 'Mathematics programmes of study: key stage 3',<sup>11</sup> document reference DFE-00179-2013, and
- (c) without prejudice to the above requirements and those outlined in the Content Document, in each set of assessments Mathematical Skills are assessed a range of Levels of Demand which supports effective differentiation in relation to the qualification.

### **Non-examination assessment**

Condition GCSE(Electronics)2.2(b) states that an awarding organisation must ensure that of the total marks available for a GCSE Qualification in Electronics, 20 per cent of those marks shall be made available through assessments which are not Assessments by Examination.

In respect of the assessments which are not Assessments by Examination, an awarding organisation must ensure that each Learner is required to complete an extended system design and construction task which –

- (a) assesses only assessment objective AO3,
- (b) allows the Learner to demonstrate the electronics skills specified in paragraph 10 of the Content Document,
- (c) requires the Learner to produce the following evidence –
  - (i) a design brief for an electronic system which has been developed in response to a problem<sup>12</sup>,
  - (ii) an electronic system based on that design brief, and
  - (iii) such additional evidence as is necessary to enable the consideration of that Learner's level of attainment in respect of all of the relevant criteria against which Learners' performance in that assessment will be differentiated, and
- (d) is taken under conditions specified by the awarding organisation, including, in particular, conditions which –
  - (i) ensure that the evidence generated by each Learner can be Authenticated, and
  - (ii) require each Learner to produce the electronic system under Immediate Guidance or Supervision.

#### **Setting of non-examination assessments**

The problem which a Learner must address in an assessment which is not an Assessment by Examination may be set by –

- (a) the awarding organisation,
- (b) the Centre which will deliver the assessment, or

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<sup>11</sup> [www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study](http://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study)

<sup>12</sup> Throughout this document, 'problem' should be interpreted consistently with the definition given in paragraph 10 of the *Electronics GCSE Subject Content* document.

(c) the Learner, following discussion with the Centre which will deliver the assessment.

In any event, the awarding organisation must demonstrate to Ofqual's satisfaction in its assessment strategy that it has –

(a) taken all reasonable steps to identify the risk of any Adverse Effect which may result from its approach to setting the assessment, and

(b) where such a risk is identified, it has taken all reasonable steps to prevent that Adverse Effect or, where it cannot be prevented, to mitigate that Adverse Effect.

#### **Marking of non-examination assessments**

Evidence generated by a Learner in an assessment for a GCSE Qualification in Electronics which is not an Assessment by Examination may be marked –

(a) by the awarding organisation or a person connected to the awarding organisation,

(b) by a Centre, or

(c) through a combination of (a) and (b).

In any event, the awarding organisation must demonstrate to Ofqual's satisfaction in its assessment strategy that –

(a) it has taken all reasonable steps to identify the risk of any Adverse Effect which may result from its approach to marking the assessments (and to Moderation where appropriate) and

(b) where such a risk is identified, it has taken all reasonable steps to prevent that Adverse Effect or, where it cannot be prevented, to mitigate that Adverse Effect.

### **Proposed guidance for GCSE electronics**

3.3 We are proposing to introduce the following guidance which will apply to all new GCSE qualifications in electronics:

- guidance on assessment objectives.

#### **Guidance on assessment objectives for GCSE Qualifications in Electronics**

Condition GCSE(Electronics)1.2 allows us to specify requirements and guidance relating to assessment objectives for GCSE Qualifications in Electronics.

We published our requirements in relation to assessment objectives in *GCSE Subject Level Conditions and Requirements for Electronics*, and reproduce them in the table below.

	Objective	Weighting
AO1	Demonstrate knowledge and understanding of the ideas, techniques and procedures of electronics	35%
AO2	Apply knowledge and understanding of the ideas, techniques and procedures of electronics	35%
AO3	Analyse problems and design, build, test and evaluate electronic systems to address identified needs	30%

We set out below our guidance for the purposes of Condition GCSE(Electronics)1.2. This guidance explains how we expect awarding organisations to interpret these assessment objectives in terms of:

- the discrete ‘elements’ within each assessment objective that questions and tasks could target and/or seek to credit – our expectation is that each and every question/task should target or seek to credit at least one of these elements, and may target or seek to credit multiple elements across one or more assessment objectives;
- the coverage expectations, such as in relation to the different elements within each assessment objective and how those elements should be sampled over time; and
- the key areas of emphasis in each assessment objective and the particular meaning for the subject of any key terms and phrases used; defined terms are shown in bold text, followed by their definitions.

In line with the obligations set out in Condition GCSE(Electronics)1.2, we expect awarding organisations to be able to demonstrate how they have had regard to this guidance. For example, an awarding organisation could map how it has regard to the guidance as it:

- develops its sample assessment materials;
- delivers the qualification;

- develops and applies its approach to sampling the elements into which the assessment objectives are divided; and
- monitors the qualification to make sure it addresses all elements appropriately.

AO1 – Demonstrate knowledge and understanding of the ideas, techniques and procedures of electronics.			35%
Strands	Elements	Coverage	Interpretations and Definitions
n/a	<p>1a – Demonstrate knowledge and understanding of the ideas of electronics.</p> <p>1b – Demonstrate knowledge and understanding of the techniques and procedures of electronics.</p>	<ul style="list-style-type: none"> <li>■ Full coverage in each set of assessments (but not every assessment).<sup>13</sup></li> <li>■ A reasonable balance between the elements within this assessment objective.</li> <li>■ Awarding organisations should justify the balance between elements in their assessment strategies.</li> <li>■ No more than 10% of the total marks for the qualification should reward demonstrating knowledge in isolation<sup>14</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Ideas, techniques and procedures of electronics</b> are aspects of subject content. In the context of this assessment objective – <ul style="list-style-type: none"> <li>□ ideas include the subject-specific requirements as set out in the document published by the Secretary of State entitled ‘Electronics GCSE subject content’, document reference DFE-00039-2016, the ‘Content Document’ – for example, the concepts of electronics and the equations and units that are used in electronics, and</li> <li>□ techniques and procedures include processes and methods, how to do something and why it should be done in a particular way, for example as part of solving a problem or producing a product.</li> </ul> </li> <li>■ The emphasis in this assessment objective is on Learners recalling knowledge and communicating relevant knowledge and understanding from the course of study – for instance, of facts, definitions and the behaviour of electronic components and circuits.</li> </ul>

<sup>13</sup> For the purposes of this guidance, a ‘set of assessments’ means the assessments to be taken by a particular Learner for a GCSE Qualification in Electronics. For clarity, the assessments taken by Learners may vary, depending on any possible routes through the qualification.

<sup>14</sup> Marks which ‘reward demonstrating knowledge in isolation’ means any mark awarded solely for recalling facts or other knowledge. It does not include marks awarded for selecting appropriate knowledge (for example, to evidence an argument), or for applying knowledge to a particular context.

AO2 – Apply knowledge and understanding of the ideas, techniques and procedures of electronics			35%
Strands	Elements	Coverage	Interpretations and Definitions
n/a	<p>1a – Apply knowledge and understanding of the ideas of electronics.</p> <p>1b – Apply knowledge and understanding of the techniques and procedures of electronics.</p>	<ul style="list-style-type: none"> <li>■ Full coverage in each set of assessments (but not every assessment).</li> <li>■ A reasonable balance between the elements within this assessment objective.</li> <li>■ Awarding organisations should justify the balance between elements in their assessment strategies.</li> </ul>	<ul style="list-style-type: none"> <li>■ The emphasis in this assessment objective is on Learners applying their knowledge and understanding to provide meaning or explanation – for instance, to connect theory with particular contexts, stimuli or materials. This application should relate principally to:                             <ul style="list-style-type: none"> <li>□ novel situations that are not clearly indicated in the specification,</li> <li>□ developing further material that is covered in the specification,</li> <li>□ making links between such types of material, which are not signalled in the specification,</li> <li>□ identifying appropriate techniques and measuring instruments</li> </ul> </li> <li>■ The application should also involve determining how to make sense of connections and linkages within information and detail; though not to the extent of reaching conclusions or making judgements.</li> </ul>



AO3 - Analyse problems and design, build, test and evaluate electronic systems to address identified needs			30%
Strands	Elements	Coverage	Interpretations and Definitions
n/a	<p>1a – Analyse problems and design electronic systems to address identified needs.</p> <p>1b – Analyse problems and build electronic systems to address identified needs.</p> <p>1c – Analyse problems and test electronic systems to address identified needs.</p> <p>1d – Analyse problems and evaluate electronic systems to address identified needs.</p>	<ul style="list-style-type: none"> <li>■ Full coverage in each set of assessments (but not in every assessment).</li> <li>■ A reasonable balance between the elements within this assessment objective.</li> <li>■ Elements 1b and 1c should only be assessed through non-exam assessment. Elements 1a and 1d must be assessed through the Assessments by Examination, but may also be assessed through non-exam assessment.</li> <li>■ Awarding organisations should justify the balance between elements in their assessment strategies.</li> </ul>	<ul style="list-style-type: none"> <li>■ In the context of this assessment objective –                             <ul style="list-style-type: none"> <li>□ <b>problems</b> should be interpreted consistently with the definition given in paragraph 10 of the Content Document.</li> <li>□ <b>analyse</b> means deconstructing a problem or context to identify a need and making links to the knowledge and understanding in the subject content.</li> <li>□ <b>design</b> means synthesising different aspects of knowledge and understanding to propose a working electronic solution.</li> <li>□ <b>build</b> is the process of constructing or assembling circuits or programming microcontrollers</li> <li>□ <b>test</b> is the process of using appropriate techniques and instruments to make judgements about the performance of electronic solutions</li> </ul> </li> <li>■ In the evaluation of electronic systems, Learners should be expected to demonstrate that they have reflected upon the performance of the system against the design brief, and justified changes and/or improvements during the development of the solution.</li> <li>■ The emphasis in this assessment objective is the outcome that Learners produce through the analysis of evidence, and their reasoning.</li> </ul>

**Questions on proposed Conditions, requirements and guidance for GCSE electronics**

**Question 10: Do you have any comments on our proposed Conditions and requirements for GCSE electronics?**

**Question 11: Do you have any comments on our proposed guidance for GCSE electronics?**

## Our proposed Conditions, requirements and guidance for GCE Electronics

4.1 As set out above, we are proposing to introduce subject-specific Conditions, requirements and guidance to implement the proposals in this consultation. We set out our proposed Conditions, requirements and guidance below.

### Proposed Conditions and requirements for GCE electronics

4.2 We are proposing to introduce the following Conditions and requirements which will apply to all new GCSE qualifications in electronics:

- a Condition covering compliance with subject content and assessment objectives;
- a further Condition which permits non-exam assessment, specifies the percentage of exam- and non-exam assessment, and allows us to set more detailed rules and guidance for non-exam assessment;
- our assessment objectives;
- requirements for assessments which cover assessment of mathematical skills; and
- requirements for non-exam assessments.

<b>Condition</b>	<b>Compliance with content requirements</b>
<b>GCE(Electronics)1</b>	
GCE (Electronics)1.1	In respect of each GCE Qualification in Electronics which it makes available, or proposes to make available, an awarding organisation must –  (a) comply with the requirements relating to that qualification set out in the document published by the Secretary of State entitled ‘Electronics GCE AS and A level subject content’ <sup>15</sup> , document reference DFE-00038-2016,

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<sup>15</sup> [www.gov.uk/government/publications/gce-as-and-a-level-electronics](http://www.gov.uk/government/publications/gce-as-and-a-level-electronics)

	<p>(b) have regard to any recommendations or guidelines relating to that qualification set out in that document, and</p> <p>(c) interpret that document in accordance with any requirements, and having regard to any guidance, which may be published by Ofqual and revised from time to time.</p>
GCE (Electronics)1.2	In respect of each GCE Qualification in Electronics which it makes available, or proposes to make available, an awarding organisation must comply with any requirements, and have regard to any guidance, relating to the objectives to be met by any assessment for that qualification which may be published by Ofqual and revised from time to time.
<b>Condition GCSE(Electronics)2</b>	<b>Assessment</b>
GCE (Electronics)2.1	Condition GCE4.1 does not apply to any GCE Qualification in Electronics which an awarding organisation makes available or proposes to make available.
GCE (Electronics)2.2	<p>In respect of the total marks available for a GCE Qualification in Electronics which it makes available, an awarding organisation must ensure that –</p> <p>(a) 80 per cent of those marks are made available through Assessments by Examination, and</p> <p>(b) 20 per cent of those marks are made available through assessments that are not Assessments by Examination.</p>
GCE(Electronics)2.3	An awarding organisation must ensure that in respect of each assessment for a GCE Qualification in Electronics which it makes available it complies with any requirements, and has regard to any guidance, which may be published by Ofqual and revised from time to time.

### Assessment objectives – GCE Qualifications in Electronics

Condition GCE(Electronics)1.2 allows us to specify requirements relating to the objectives to be met by any assessment for GCE Qualifications in Electronics.

The assessment objectives set out below constitute requirements for the purposes of Condition GCE(Electronics)1.2. Awarding organisations must comply with these requirements in relation to all GCE Qualifications in Electronics they make available.

	Objective	Weighting (A level)	Weighting (AS)
<b>AO1</b>	Demonstrate knowledge and understanding of the ideas, techniques and procedures of electronics	30-35%	30-35%
<b>AO2</b>	Apply knowledge and understanding of the ideas, techniques and procedures of electronics	35-40%	35-40%
<b>AO3</b>	Analyse problems and design, build, test and evaluate electronic systems to address identified needs	30%	30%

## **Assessment requirements – GCE Qualifications in Electronics**

Condition GCE(Electronics)2.1 allows us to specify requirements in relation to assessments for GCE Qualifications in Electronics.

We set out below our requirements for the purposes of Condition GCE(Electronics)2.1. Awarding organisations must comply with these requirements in relation to all GCE Qualifications in Electronics they make available.

### **Mathematical skills**

The subject content for GCE Qualifications in Electronics is set out in the document published by the Secretary of State entitled 'Electronics GCE AS and A level subject content', document reference DFE-00038-2016 (the 'Content Document').

Appendix 2 to the Content Document specifies the mathematical knowledge, skills and understanding which Learners will be required to use and apply in GCE Qualifications in Electronics ('Mathematical Skills').

In designing and setting the Assessments by Examination for a GCE Qualification in Electronics which it makes available, or proposes to make available, an awarding organisation must ensure that –

- (a) questions and tasks rewarding the use of Mathematical Skills assess those skills within the context of other areas of the subject content, and not in isolation,
- (b) at least 30 per cent of the total marks for the qualification reward the use of Mathematical Skills at a Level of Demand which is not lower than that which is expected of Learners in assessments for the higher tier in a GCSE Qualification in Mathematics, and
- (c) without prejudice to the above requirements and those outlined in the Content Document, in each set of assessments Mathematical Skills are assessed a range of Levels of Demand which supports effective differentiation in relation to the qualification.

### **Non-examination assessment**

Condition GCE(Electronics)2.2(b) states that an awarding organisation must ensure that of the total marks available for a GCE Qualification in Electronics, 20 per cent of those marks shall be made available through assessments which are not Assessments by Examination.

An awarding organisation must ensure that each assessment which is not an Assessment by Examination is designed and set to –

- (a) assess only assessment objective AO3,
- (b) allow the Learner to demonstrate the electronics skills specified in paragraph 10 of the Content Document,
- (c) require each Learner to produce such evidence as is required to enable the awarding organisation to assess the extent to which the Learner has met all the assessment criteria for the assessment,
- (d) be taken under conditions specified by the awarding organisation, including, in particular, conditions which –
  - a. ensure that the evidence generated by each Learner can be Authenticated, and
  - b. require each Learner to produce each electronic system under Immediate Guidance or Supervision.

#### **Setting of non-examination assessments**

The problem(s) which a Learner must address in an assessment which is not an Assessment by Examination may be set by –

- (a) the awarding organisation, or
- (b) the Centre which will deliver the assessment, or
- (c) the Learner, following discussion with the Centre which will deliver the assessment.

In any event, the awarding organisation must demonstrate to Ofqual's satisfaction in its assessment strategy that –

- (a) it has taken all reasonable steps to identify the risk of any Adverse Effect which may result from its approach to setting the assessment, and
- (b) where such a risk is identified, it has taken all reasonable steps to prevent that Adverse Effect or, where it cannot be prevented, to mitigate that Adverse Effect.

#### **Marking of non-examination assessments**

Evidence generated by a Learner in an assessment for a GCE Qualification in Electronics which is not an Assessment by Examination may be marked –

- (a) by the awarding organisation or a person connected to the awarding organisation,
- (b) by a Centre, or
- (c) through a combination of (a) and (b).

In any event, the awarding organisation must demonstrate to Ofqual’s satisfaction in its assessment strategy that –

- (a) it has taken all reasonable steps to identify the risk of any Adverse Effect which may result from its approach to marking the assessments (and to Moderation where appropriate) and
- (b) where such a risk is identified, it has taken all reasonable steps to prevent that Adverse Effect or, where it cannot be prevented, to mitigate that Adverse Effect.

### Proposed guidance for GCE electronics

4.3 We are proposing to introduce the following guidance which will apply to all new AS and A level qualifications in electronics:

- guidance on assessment objectives.

#### Guidance on assessment objectives for GCE Qualifications in Electronics

Condition GCE(Electronics)1.2 allows us to specify requirements and guidance relating to assessment objectives for GCE Qualifications in Electronics.

We published our requirements in relation to assessment objectives in *GCE Subject Level Conditions and Requirements for Electronics*, and reproduce them in the table below.

	Objective	Weighting (A level)	Weighting (AS)
<b>AO1</b>	Demonstrate knowledge and understanding of the ideas, techniques and procedures of electronics	30-35%	30-35%
<b>AO2</b>	Apply knowledge and understanding of the ideas, techniques and procedures of electronics	35-40%	35-40%



<b>AO3</b>	Analyse problems and design, build, test and evaluate electronic systems to address identified needs	30%	30%
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We set out below our guidance for the purposes of Condition GCE(Electronics)1.2. This guidance explains how we expect awarding organisations to interpret these assessment objectives in terms of:

- the discrete ‘elements’ within each assessment objective that questions and tasks could target and/or seek to credit – our expectation is that each and every question/task should target or seek to credit at least one of these elements, and may target or seek to credit multiple elements across one or more assessment objectives;
- the coverage expectations, such as in relation to the different elements within each assessment objective and how those elements should be sampled over time; and
- the key areas of emphasis in each assessment objective and the particular meaning for the subject of any key terms and phrases used; defined terms are shown in bold text, followed by their definitions.

In line with the obligations set out in Condition GCE(Electronics)1.2, we expect awarding organisations to be able to demonstrate how they have had regard to this guidance. For example, an awarding organisation could map how it has regard to the guidance as it:

- develops its sample assessment materials;
- delivers the qualification;
- develops and applies its approach to sampling the elements into which the assessment objectives are divided; and
- monitors the qualification to make sure it addresses all elements appropriately.

AO1 – Demonstrate knowledge and understanding of the ideas, techniques and procedures of electronics.			30-35% (A level) 30-35% (AS)
Strands	Elements	Coverage	Interpretations and Definitions
n/a	1a – Demonstrate knowledge and understanding of the ideas of electronics.	<ul style="list-style-type: none"> <li>■ Full coverage in each set of assessments (but not every assessment).<sup>16</sup></li> <li>■ A reasonable balance between the elements within this assessment objective.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Ideas, techniques and procedures of electronics</b> are aspects of subject content. In the context of this assessment objective –                             <ul style="list-style-type: none"> <li>□ ideas include the subject-specific requirements as set out in the document published by the Secretary of State entitled ‘Electronics GCE AS and A level subject content’, document reference DFE-00038-2016, the ‘Content Document’ – for example, the concepts of electronics and the equations and units that are used in electronics.</li> <li>□ techniques and procedures include processes and methods, how to do something and why it should be done in a particular way, for example as part of solving a problem or producing a product.</li> </ul> </li> <li>■ The emphasis in this assessment objective is on learners recalling knowledge and communicating relevant knowledge and understanding from the course of study – for instance, of facts, definitions and the behaviour of electronic components and circuits.</li> </ul>
	1b – Demonstrate knowledge and understanding of the techniques and procedures of electronics.	<ul style="list-style-type: none"> <li>■ Awarding organisations should justify the balance between elements in their assessment strategies.</li> <li>■ No more than 10% of the total marks for the qualification should reward demonstrating knowledge in isolation<sup>17</sup>.</li> </ul>	

<sup>16</sup> For the purposes of this guidance, a ‘set of assessments’ means the assessments to be taken by a particular Learner for a GCE Qualification in Electronics. For clarity, the assessments taken by Learners may vary, depending on any possible routes through the qualification.

<sup>17</sup> Marks which ‘reward demonstrating knowledge in isolation’ means any mark awarded solely for recalling facts or other knowledge. It does not include marks awarded for selecting appropriate knowledge (for example, to evidence an argument), or for applying knowledge to a particular context.

AO2 – Apply knowledge and understanding of the ideas, techniques and procedures of electronics			35-40% (A level) 35-40% (AS)
Strands	Elements	Coverage	Interpretations and Definitions
n/a	<p>1a – Apply knowledge and understanding of the ideas of electronics.</p> <p>1b – Apply knowledge and understanding of the techniques and procedures of electronics.</p>	<ul style="list-style-type: none"> <li>■ Full coverage in each set of assessments (but not every assessment).</li> <li>■ A reasonable balance between the elements within this assessment objective.</li> <li>■ Awarding organisations should justify the balance between elements in their assessment strategies.</li> </ul>	<ul style="list-style-type: none"> <li>■ The emphasis in this assessment objective is on Learners applying their knowledge and understanding to provide meaning or explanation – for instance, to connect theory with particular contexts, stimuli or materials. This application should relate principally to:                             <ul style="list-style-type: none"> <li>□ novel situations that are not clearly indicated in the specification,</li> <li>□ developing further material that is covered in the specification,</li> <li>□ making links between such types of material, which are not signalled in the specification, and</li> <li>□ identifying appropriate techniques and measuring instruments.</li> </ul> </li> <li>■ The application should also involve determining how to make sense of connections and linkages within information and detail; though not to the extent of reaching conclusions or making judgements.</li> </ul>

AO3 - Analyse problems and design, build, test and evaluate electronic systems to address identified needs			30% (A level) 30% (AS)
Strands	Elements	Coverage	Interpretations and Definitions
n/a	1a – Analyse problems and design electronic systems to address identified needs.	<ul style="list-style-type: none"> <li>■ Full coverage in each set of assessments (but not in every assessment).</li> <li>■ A reasonable balance between the elements within this assessment objective.</li> <li>■ Elements 1b and 1c should only be assessed through non-exam assessment. Elements 1a and 1d must be assessed through the Assessments by Examination, but may also be assessed through non-exam assessment.</li> <li>■ Awarding organisations should justify the balance between elements in their assessment strategies.</li> </ul>	<ul style="list-style-type: none"> <li>■ In the context of this assessment objective –                             <ul style="list-style-type: none"> <li>□ <b>problems</b> should be interpreted consistently with the definition given in paragraph 10 of the Content Document.</li> <li>□ <b>analyse</b> means deconstructing a problem or context to identify a need and making links to the knowledge and understanding in the subject content.</li> <li>□ <b>design</b> means synthesising different aspects of knowledge and understanding to propose a working electronic solution.</li> <li>□ <b>build</b> is the process of constructing or assembling circuits or programming microcontrollers.</li> <li>□ <b>test</b> is the process of using appropriate techniques and instruments to make judgements about the performance of electronic solutions.</li> <li>□ <b>electronic systems</b> includes, analogue, digital and microcontroller circuits.</li> </ul> </li> <li>■ In the evaluation of electronic systems Learners should be expected to demonstrate that they have reflected upon the performance of the system against the design brief, and justified changes and/or improvements during the development of the solution.</li> </ul>
	1b – Analyse problems and build electronic systems to address identified needs.		
	1c – Analyse problems and test electronic systems to address identified needs.		
	1d – Analyse problems and evaluate electronic systems to address identified needs.		

**Questions on proposed Conditions, requirements and guidance for GCE electronics**

**Question 12: Do you have any comments on our proposed Conditions and requirements for AS and A level electronics?**

**Question 13: Do you have any comments on our proposed guidance for AS and A level electronics?**

## Equality impact analysis

### Ofqual's role, objectives and duties

5.1 We are subject to the public sector equality duty. We have set out in Appendix B how this duty interacts with our statutory objectives and other duties.

### Equality impact analysis relating to proposed changes to GCSE, AS and A level electronics

5.2 We have considered the potential impact on students who share protected characteristics<sup>18</sup> of the application of the principles and features that will apply to all new GCSE, AS and A level qualifications. Our equality impact analyses for our earlier consultations on GCSE,<sup>19</sup> AS and A level reform<sup>20</sup> are therefore of interest and we encourage you to read them.

5.3 Issues concerning the proposed subject content have been considered by DfE, who have published their own Equalities Impact Analysis on their subject content proposals.<sup>21</sup>

5.4 We have also previously considered the potential impact on students who share protected characteristics of our decisions on assessment arrangements for this subject.<sup>22</sup>

5.5 We do not repeat here all of the evidence we have considered, as this can be found in our earlier reports. We focus instead on the specific issues that arise from the new proposals in this consultation, and from the way in which we are implementing our previous policy decisions.

5.6 We have not identified any additional negative impacts on students who share protected characteristics which would result from the proposals in this

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<sup>18</sup> For the purposes of the public sector equality duty, the protected characteristics are disability, racial group, age, religion or belief, pregnancy or maternity, sex, sexual orientation, gender reassignment.

<sup>19</sup> <http://webarchive.nationalarchives.gov.uk/20141031163546/http://comment.ofqual.gov.uk/gcse-reform-june-2013/category/8-equality-impact-analysis/>

<sup>20</sup> <http://webarchive.nationalarchives.gov.uk/20141031163546/http://www.ofqual.gov.uk/files/2012-06-18-equality-analysis-of-the-a-level-reform-consultation.pdf>

<sup>21</sup> [www.gov.uk/government/publications/gcse-and-a-level-subject-content-equality-analysis-14-subjects](http://www.gov.uk/government/publications/gcse-and-a-level-subject-content-equality-analysis-14-subjects)

<sup>22</sup> [www.gov.uk/government/consultations/developing-new-gcses-as-and-a-levels-for-first-teaching-in-2017](http://www.gov.uk/government/consultations/developing-new-gcses-as-and-a-levels-for-first-teaching-in-2017)

consultation (beyond those that we and DfE have already identified in our earlier reports).

- 5.7 During this consultation, we will continue to seek and consider evidence and feedback to our proposals that might help us identify any potential subject-specific impacts on students who share a protected characteristic.
- 5.8 Exam boards are required to consider the accessibility of their qualifications at the design stage and to remove any unjustifiable barriers.

**Question 14: We have not identified any ways in which the proposals for GCSE, AS and A level electronics would impact (positively or negatively) on persons who share a protected characteristic.<sup>23</sup> Are there any potential impacts we have not identified?**

**Question 15: Are there any additional steps we could take to mitigate any negative impact resulting from these proposals on persons who share a protected characteristic?**

**Question 16: Do you have any other comments on the impacts of the proposals on students who share a protected characteristic?**

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<sup>23</sup> 'Protected characteristic' is defined in the Equality Act 2010. Here, it means disability, racial group, age, religion or belief, pregnancy or maternity, sex, sexual orientation and gender reassignment.

## Appendix A: Regulatory tools

### Comparability and innovation

Exam boards operate in a market. They can design and deliver their qualifications in different ways, within the parameters we set. This provides some choice to schools or colleges, which is one of the benefits of a qualifications market. Exam boards must, however, make sure that the levels of attainment indicated by their qualifications are comparable to those of other exam boards' versions of the qualifications. The exam boards cooperate in a range of ways to make sure that the standards of their respective qualifications are comparable. To make sure standards are maintained and comparability is secured, we review GCSE, AS and A level qualifications before they can be made available, by applying an accreditation requirement to the qualifications, and we oversee the awarding of GCSE, AS and A level qualifications.

We do not wish to close down opportunities for exam boards to design and deliver their qualifications in different ways. Indeed, we have a statutory duty to have regard to the desirability of facilitating innovation in connection with the provision of regulated qualifications and a statutory objective with regard to the efficiency with which the qualifications market works. If we adopt a regulatory approach in which all aspects of a qualification are very tightly defined, we could effectively remove scope for exam boards to distinguish their qualifications from others and stop choice for schools or colleges. On the other hand, if exam boards have too much scope to vary their approach their qualifications might not be comparable.

In striking a balance, we use a range of tools to regulate qualifications and the exam boards that provide them. The main regulatory tools we use for the qualifications in this consultation are explained below.

### Conditions of Recognition

Exam boards must comply at all times with our Conditions of Recognition. These are the main regulatory rules that we use. We can take regulatory action against an exam board that breaches or is likely to breach a Condition.

There are three sets of Conditions that will apply to new GCSEs (graded 9 to 1):

- (i) the published *General Conditions of Recognition*<sup>24</sup> that apply to all regulated qualifications;

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<sup>24</sup> [www.gov.uk/government/publications/general-conditions-of-recognition](http://www.gov.uk/government/publications/general-conditions-of-recognition)



- (ii) GCSE (9 to 1) Qualification Level Conditions and Requirements<sup>25</sup> that apply to all new GCSE qualifications;
- (iii) GCSE Subject Level Conditions that apply to new GCSEs (graded 9 to 1) in a specific subject. We are consulting now on draft GCSE Subject Level Conditions for electronics.

There are also three sets of Conditions that will apply to new AS and A level qualifications:

- (i) the published *General Conditions of Recognition*<sup>26</sup> that apply to all regulated qualifications;
- (ii) *GCE Qualification Level Conditions and Requirements*<sup>27</sup> that apply to all new AS and A level qualifications;
- (iii) GCE Subject Level Conditions that apply to new AS and A level qualifications in a specific subject. We are consulting now on draft GCE Subject Level Conditions for electronics.

## Regulatory documents

In some Conditions we refer to published regulatory requirements. We publish these in regulatory documents. The Conditions require exam boards to comply with such documents.

We are proposing to introduce regulatory documents for GCSE and for AS and A level electronics which cover our requirements in relation to non-exam assessments.

The requirements will have effect as if they were part of a Condition. The requirements will be set out in a stand-alone section of each Conditions document, simply because they are technical and detailed so they sit better as separate from, rather than within, the Condition itself.

## Statutory guidance

We publish guidance to help exam boards identify the types of behaviour or practices they could use to meet a Condition. Exam boards must have regard to such guidance, but they do not have to follow this guidance in the same way that they must comply with the Conditions; they are free to meet the outcomes of the Conditions in their own ways. An exam board that decides to take a different

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<sup>25</sup> [www.gov.uk/government/publications/gcse-9-to-1-qualification-level-conditions](http://www.gov.uk/government/publications/gcse-9-to-1-qualification-level-conditions)

<sup>26</sup> [www.gov.uk/government/publications/general-conditions-of-recognition](http://www.gov.uk/government/publications/general-conditions-of-recognition)

<sup>27</sup> [www.gov.uk/government/publications/gce-qualification-level-conditions-and-requirements](http://www.gov.uk/government/publications/gce-qualification-level-conditions-and-requirements)

approach to that set out in our guidance must still be able to show that it is meeting the Condition or Conditions to which the guidance relates.

We are consulting now on draft guidance for new GCSEs, AS and A levels in electronics.

## Appendix B: Ofqual's role, objectives and duties

Our statutory objectives include the qualifications standards objective, which is to secure that the qualifications we regulate:

- (a) give a reliable indication of knowledge, skills and understanding; and
- (b) indicate:
  - (i) a consistent level of attainment (including over time) between comparable regulated qualifications; and
  - (ii) a consistent level of attainment (but not over time) between qualifications we regulate and comparable qualifications (including those awarded outside the UK) that we do not regulate.

We must therefore regulate so that qualifications properly differentiate between students who have demonstrated that they have the knowledge, skills and understanding required to attain the qualification and those who have not.

We also have a duty under the Apprenticeship, Skills, Children and Learning Act 2009 to have regard to the reasonable requirements of relevant students, including those with special educational needs and disabilities, of employers and of the higher education sector, and to aspects of government policy when so directed by the Secretary of State.

As a public body, we are subject to the public sector equality duty.<sup>28</sup> This duty requires us to have due regard to the need to:

- (a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited under the Equality Act 2010;
- (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;
- (c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

The exam boards that design, deliver and award AS and A level qualifications are required by the Equality Act, among other things, to make reasonable adjustments for disabled people taking their qualifications, except where we have specified that such adjustments should not be made.

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<sup>28</sup> Equality Act 2010, section 149.

When we decide whether such adjustments should not be made, we must have regard to:

- (a) the need to minimise the extent to which disabled persons are disadvantaged in attaining the qualification because of their disabilities;
- (b) the need to secure that the qualification gives a reliable indication of the knowledge, skills and understanding of a person upon whom it is conferred;
- (c) the need to maintain public confidence in the qualification.

Legislation therefore sets out a framework within which we must operate. We are subject to a number of duties and we must aim to achieve a number of objectives. These different duties and objectives can, from time to time, conflict with each other. For example, if we regulate to secure that a qualification gives a reliable indication of a student's knowledge, skills and understanding, a student who has not been able to demonstrate the required knowledge, skills and/or understanding will not be awarded the qualification. A person may find it more difficult, or impossible, to demonstrate the required knowledge, skills and/or understanding because they have a protected characteristic. This could put them at a disadvantage relative to others who have been awarded the qualification. It is not always possible for us to regulate so that we can both secure that qualifications give a reliable indication of knowledge, skills and understanding and advance equality between people who share a protected characteristic and those who do not. We must review all the available evidence and actively consider all the available options before coming to a final, rational decision.

Qualifications cannot be used to mitigate inequalities or unfairness in the education system or in society more widely that might affect, for example, students' preparedness to take the qualification and the assessments within it. While a wide range of factors can have an impact on a student's ability to achieve a particular mark in an assessment, our influence is limited to the way the qualification is designed and assessed.

We require the exam boards to design qualifications to give a reliable indication of the knowledge, skills and understanding of those on whom they are conferred. We also require the exam boards to avoid, where possible, features of a qualification that could, without justification, make a qualification more difficult for a student to achieve because they have a particular protected characteristic. We require exam boards to monitor whether any features of their qualifications have this effect.

In setting the overall framework within which exam boards will design, assess and award the reformed GCSE, A level and AS qualifications, we want to understand the possible impacts of the proposals on persons who share a protected characteristic.

The protected characteristics under the Equality Act 2010 are:

- age;
- disability;
- gender reassignment;
- marriage and civil partnerships;
- pregnancy and maternity;
- race;
- religion or belief;
- sex;
- sexual orientation.

It should be noted that with respect to the public sector equality duty under section 149 of the 2010 Act, we are not required to have due regard to impacts on those who are married or in a civil partnership.

## Responding to the consultation

### Your details

To evaluate responses properly, we need to know who is responding to the consultation and in what capacity. We will therefore only consider your response if you complete the following information section.

We will publish our evaluation of responses. Please note that we may publish all or part of your response unless you tell us (in your answer to the confidentiality question) that you want us to treat your response as confidential. If you tell us you wish your response to be treated as confidential, we will not include your details in any published list of respondents, although we may quote from your response anonymously.

Please answer all questions marked with a star\*

Name\*

Position\*

Organisation name (if applicable)\*

Address

Email

Telephone

**Would you like us to treat your response as confidential?\***

If you answer yes, we will not include your details in any list of people or organisations that responded to the consultation.

Yes  No

**Is this a personal response or an official response on behalf of your organisation?\***

Personal response (please answer the question ‘If you ticked “Personal response”...’)

Official response (please answer the question ‘If you ticked “Official response”...’)

**If you ticked “Personal response”, which of the following are you?**

Student

Parent or carer

Teacher (but responding in a personal capacity)

Other, including general public (please state below)

---

**If you ticked “Official response”, please respond accordingly:**

**Type of responding organisation\***

Awarding organisation

Local authority

School or college (please answer the question below)

Academy chain

Private training provider

University or other higher education institution

Employer

Other representative or interest group (please answer the question below)

**School or college type**

- Comprehensive or non-selective academy
  - State selective or selective academy
  - Independent
  - Special school
  - Further education college
  - Sixth form college
  - Other (please state below)
- 

**Type of representative group or interest group**

- Group of awarding organisations
  - Union
  - Employer or business representative group
  - Subject association or learned society
  - Equality organisation or group
  - School, college or teacher representative group
  - Other (please state below)
- 

**Nation\***

- England
- Wales
- Northern Ireland
- Scotland
- Other EU country: \_\_\_\_\_
- Non-EU country: \_\_\_\_\_



**How did you find out about this consultation?**

Our newsletter or another one of our communications

Our website

Internet search

Other

---

**May we contact you for further information?**

Yes  No

## Questions

**Question 1: To what extent do you agree or disagree that we should introduce a Condition which requires exam boards to comply with the relevant subject content and assessment objectives?**

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain your reasons:

.....

.....

.....

**Question 2: To what extent do you agree or disagree that we should introduce guidance which clarifies how exam boards should interpret our assessment objectives?**

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain your reasons:

.....

.....

.....

**Question 3: To what extent do you agree or disagree that we should introduce rules for exam assessment to ensure exam boards take a consistent approach to assessing mathematical skills in GCSE, AS and A level electronics?**

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain your reasons:

.....

.....

.....

**Question 4: To what extent do you agree or disagree with our proposed approach to assessing mathematical skills in exams for GCSE, AS and A level electronics?**

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain your reasons:

.....

.....

.....

**Question 5: To what extent do you agree or disagree that we should introduce a Condition which permits non-exam assessment, specifies the proportion of exam- and non-exam assessment, and allows us to set more detailed rules and guidance on non-exam assessment?**

- Strongly agree
- Agree

Neither agree nor disagree

Disagree

Strongly disagree

Please explain your reasons:

.....  
.....  
.....

**Question 6: To what extent do you agree or disagree with our proposed approach to allocating non-exam assessment marks to assessment objectives in GCSE, AS and A level electronics?**

Strongly agree

Agree

Neither agree nor disagree

Disagree

Strongly disagree

Please explain your reasons:

.....  
.....  
.....

**Question 7: To what extent do you agree or disagree with our proposed approach to setting non-exam assessment tasks in GCSE, AS and A level electronics?**

Strongly agree

Agree

Neither agree nor disagree

Disagree

Strongly disagree

Please explain your reasons:

.....  
.....  
.....

**Question 8: To what extent do you agree or disagree with our proposed approach to authenticating non-exam assessment in GCSE, AS and A level electronics?**

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain your reasons:

.....  
.....  
.....

**Question 9: To what extent do you agree or disagree with our proposed approach to marking of non-exam assessment in GCSE, AS and A level electronics?**

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain your reasons:

.....  
.....

.....  
**Question 10: Do you have any comments on our proposed Conditions and requirements for GCSE electronics?**

Yes  No

.....  
.....  
.....

**Question 11: Do you have any comments on our proposed guidance for GCSE electronics?**

Yes  No

.....  
.....  
.....

**Question 12: Do you have any comments on our proposed Conditions and requirements for AS and A level electronics?**

Yes  No

.....  
.....  
.....

**Question 13: Do you have any comments on our proposed guidance for AS and A level electronics?**

Yes  No

.....  
.....  
.....

**Question 14: We have not identified any ways in which the proposals for GCSE, AS and A level electronics would impact (positively or negatively) on**

**persons who share a protected characteristic.<sup>29</sup> Are there any potential impacts we have not identified?**

Yes  No

.....  
.....  
.....

**Question 15: Are there any additional steps we could take to mitigate any negative impact resulting from these proposals on persons who share a protected characteristic?**

Yes  No

.....  
.....  
.....

**Question 16: Do you have any other comments on the impacts of the proposals on students who share a protected characteristic?**

Yes  No

.....  
.....  
.....

### **Accessibility of our consultations**

We are looking at how we provide accessible versions of our consultations and would appreciate it if you could spare a few moments to answer the following questions. Your answers to these questions will not be considered as part of the consultation and will not be released to any third parties.

**We want to write clearly, directly and put the reader first. Overall, do you think we have got this right in this consultation?**

\_\_\_\_\_

<sup>29</sup> 'Protected characteristic' is defined in the Equality Act 2010. Here, it means disability, racial group, age, religion or belief, pregnancy or maternity, sex, sexual orientation and gender reassignment.

Yes  No

**Do you have any comments or suggestions about the style of writing?**

Yes  No

.....

.....

.....

**Do you have any special requirements to enable you to read our consultations? (for example, screen reader, large text, and so on)**

Yes  No

**Which of the following do you currently use to access our consultation documents? (select all that apply)**

- Screen reader / text-to-speech software
- Braille reader
- Screen magnifier
- Speech-to-text software
- Motor assistance (blow-suck tube, mouth stick, and so on)
- Other .....

**Which of the following document formats would meet your needs for accessing our consultations? (select all that apply)**

- A standard PDF
- Accessible web pages
- Large-type PDF (16 point text)
- Large-type Word document (16 point text)
- eBook (Kindle, iBooks, or similar format)
- Braille document
- Spoken document



Other .....

**How many of our consultations have you read in the last 12 months?**

1

2

3

4

5

More than 5

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