

GCE



Chief Examiner's Report
Environmental
Technology

Summer Series 2017



Foreword

This booklet outlines the performance of candidates in all aspects of CCEA's General Certificate of Education (GCE) in Environmental Technology for this series.

CCEA hopes that the Chief Examiner's and/or Principal Moderator's report(s) will be viewed as a helpful and constructive medium to further support teachers and the learning process.

This booklet forms part of the suite of support materials for the specification. Further materials are available from the specification's microsite on our website at www.ccea.org.uk.

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GCE ENVIRONMENTAL TECHNOLOGY

Chief Examiner's Report

Assessment Unit AS 1 The Earth's Capacity to Support Human Activity (AA1E1/SET1)

The majority of candidates attempted each question on the paper with few questions omitted. A wide range of marks were seen. There was no evidence that any question in particular produced a low rate of response. There was no evidence that the paper was too long for candidates to attempt all questions in the time provided.

- Q1** (a) Was answered correctly by the majority of candidates.
- (b) A surprising number of candidates did not know what the letters BPE stood for.
- (c) The description of how BPE is produced was not well known by a significant number of candidates who must learn the constituent materials and the detail of the processes involved in this and other named chemical methods referred to in the specification.
- Q2** Parts (a), (b) and (c) of this question were well answered by the majority of candidates. However, Part (d) proved more challenging. There was a range of answers showing that many candidates did not have a clear understanding of the concept of smart grid.
- Q3** This question on solar thermal collectors was generally well answered. However, in Part (a) a number of candidates concentrated their answers on the amount of roof space available as opposed to the amount required for the installation of flat plate solar thermal collectors. Some candidates also provided discussions involving electricity use when the question referred to solar thermal collectors. In Part (c) the calculation was successfully attempted by the vast majority of candidates.
- Q4** Parts (a), (b) and (d) of this question were well answered by the majority of candidates. The main error seen in Part (b) was the use of the diameter rather than the radius in the equation. Part (c) proved challenging with only a surprisingly small percentage of candidates using the correct equation for kinetic energy.
- Q5** This question proved to be challenging for a large number of candidates. It was clear that only a minority had a clear understanding of the operation of a solar PV cell in response to Part (a)(ii). Similarly, in Part (b) a large number of candidates did not explain how a solar tracking system can maximise energy output from solar collectors with many describing benefits rather than function. Part (c) was well answered.
- Q6** Parts (a), (b) and (e) of this question were well answered. A large number of candidates in response to Part (c) failed to link the lower energy density to the need to use energy to remove water from the woodchip. In response to Part (d) a number of candidates provided an answer where no reference was made to the use of bacteria/micro-organisms or the absence of oxygen in the process of anaerobic digestion. Many candidates had difficulty outlining specific advantages of commercial anaerobic digesters in response to Part (f).
- Q7** A wide range of marks were awarded in response to this question, mostly within Bands 2 and 3. Candidates should note that specific accurate detail to support their arguments is required to access higher band marks. The detail should relate to the bullet points contained within the question. Many candidates did not link their arguments to the need to move to renewable energy technologies as outlined in the question.

Principal Moderator's Report

Assessment Unit AS 2 Renewable Energy Technologies (AA1E2/SET2)

Marking was good, accurate and mostly within tolerance. Annotation was good, detailed and relevant. All student task responses were well packaged and complete. Some of the candidates produced high quality work and most candidates showed a very thorough understanding of the scenario and the implementation of renewable energy technologies to it.

AO1: Reports were well illustrated and generally a comprehensive and thorough overview of the three renewable technologies was given. The reports, were excellently written using specialist vocabulary. Referencing still was sometimes a little erratic with most candidates correctly identifying the reference to the text but a few only giving a bibliography type list with no link to the text at all. It should be mentioned that the desktop research should be centred on and refer specifically to the requirements of the scenario.

AO2: The practical investigations were well carried out. The design used was appropriate and clear. The calculations produced by most candidates were relevant and accurate. Once again it should be mentioned that the practical investigations chosen should have as their basis the requirements of the scenario.

AO3: Most physical measurements were accurate with few errors. The data was mostly presented in a range of formats. Most candidates produced a comprehensive recommendation with strong rationale. It must be pointed out, however, that the risks aspect in AO3 should also be referenced to the practical investigations as well as the desktop research.

Chief Examiner's Report

Assessment Unit A2 1 Building and Managing a Sustainable Future

All questions on the examination paper were answered by the majority of candidates there being no evidence that any specific questions proved inaccessible. A full range of marks was awarded for all of the questions. There was no evidence that candidates misinterpreted questions due to the language used in the paper. There was sufficient time allocated to the paper to allow candidates to attempt all of the questions.

Teachers and candidates are advised to review strategies used to answer questions such as Questions 3(b), 7(a) and 9 – the questions which require extended writing responses and which assess Quality of Written Communication. To obtain high band marks in these questions candidates must provide detailed responses linked to the information provided in bullet point form in the stem of each question. They must provide clear and concise arguments using specialist terms where appropriate. Spelling, punctuation and grammar must be accurate and employed in a form and style of an excellent standard.

Q1 This question was generally well answered by a large number of candidates. In response to Part (c), a number of candidates provided answers which did not identify the specific constituents and products of the two anaerobic digestion stages referred to.

Q2 A wide range of marks were awarded here. A number of responses centred on issues which restrict sustainable rural development as opposed to underpinning it.

- Q3** Part (a) of this question was poorly answered. The main errors were that candidates appeared not to be aware of the term ‘in situ’ or of the actual processes involved in this type of bioreactor. Part (b) was generally well answered by candidates who displayed a good knowledge and understanding of both phytoremediation and phytoextraction. Full marks required a comparison between the similarities and differences between the two processes.
- Q4** Parts (a) and (b) were generally well answered with few candidates scoring zero in the calculation and many candidates scoring 4 or 5 marks. A significant number of candidates could not answer Parts (c) and (d) although these are recall questions.
- Q5** Part (a) of this question was generally well answered although a number of candidates, whilst able to outline three principles of One Planet Living, failed to provide the name of the principle referred to, as required in the question. Parts (b) and (c) were well answered with most candidates displaying good knowledge and understanding of the concepts ecological footprint and carbon footprint.
- Q6** Part (a) and (b) of this question were well answered. However, Part (c) was not well answered in a significant number of cases. It was clear that candidates did not have good knowledge of this area of the specification. Candidates are advised that in order to obtain both marks in a question of this type a detailed description of the topic in question must be provided. The mark scheme published on the CCEA website illustrates the level of detail required.
- Q7** Part (a) provided a range of responses. Most candidates used the bullet points in the question to help structure their answers. Higher marks were gained by candidates who demonstrated technical knowledge and who provided a logical and coherent discussion of the constraints on developing wave and tidal power from the seas around Northern Ireland. For parts (b) and (c) many candidates gave a good definition of a smart material and were able to describe an application of a smart system.
- Q8** A significant number of candidates were unable to correctly complete Part (a) although it is a recall question from the specification. There was a range of answers for Part (b) with many candidates gaining full marks. In response to Part (c) it was clear that a significant number of candidates did not understand the meaning of the term ‘contentious’ although it is on the specification as is a list of the answers to the question. Part (d) was generally well answered.
- Q9** Candidates provided a wide range of answers with most falling within Band 2 or Band 3. Most candidates used the bullet points in the question to help structure their answer. Responses in the section dealing with the breakdown of waste in landfills was not as well discussed as the other two areas identified in the bullet points. Candidates are encouraged to plan their answers to this type of question carefully making sure that their answer is coherent and provides a logical thread through the issue being discussed.

Principal Moderator’s Report

Assessment Unit A2 2 Environmental Building Performance and Measurement

Marking was good and accurate and mostly within tolerance. Annotation was good, detailed and relevant. Some of the candidates produced high quality work and most candidates showed a very thorough understanding of CSH and its implementation to the task issues.

AO1: The reports were well illustrated and generally showed a comprehensive and thorough overview of CSH within the wider context of sustainability measurement. The quality of the written reports was excellent with clear evidence of the use of specialist vocabulary. Referencing was still a little erratic with many candidates correctly identifying the reference to the body of the text but a few only giving a bibliography type list.

AO2: Most candidates identified a range of investigations. Some areas for improvement would include the assessment of their dwelling against the Life Time Homes criteria and the pollution nitrogen oxide criteria. A more detailed methodology and analysis of their findings would have improved some candidates' overall marks. All candidates used more than one source to obtain data for the seven categories. The calculations produced by most candidates were comprehensive and accurate. It should be pointed out that the case studies chosen should have some relationship with the building under investigation.

AO3: Most physical measurements were accurate with few errors. The data was mostly presented in a range of formats. Most candidates produced a comprehensive list of recommendations with strong rationale for each. It should be noted, however, that the health and safety aspect in AO3 should be referenced to the recommendations presented.

Contact details

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