

6165-031 Environmental Science and Construction Techniques 3 Principles

Examiners' report – **June 2014**



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1 Introduction

The purpose of this document is to provide centres with feedback on the performance of candidates in the **June 2014** examination for 6165-031 Environmental Science and Construction Techniques 3 Principles.

2 Feedback on candidate performance

General feedback

The following comments are intended to help candidates prepare for the examination by having a better understanding of what is expected of them. The feedback within this report would also be valuable to tutors in understanding candidates' difficulties in answering questions and the areas where more guidance is required.

The June 2014 series question paper was found to be in accordance with the qualification requirements.

Candidates appeared to have no issues with the paper format.

The overall candidate performance is improving very slowly despite continuity in the structure of the examination. However, candidates are still struggling with questions which require them to use drawing and sketching skills, this area remains undeveloped and is demonstrated in the candidate's response because many do not attempt these questions. This is a key aspect of the qualification and centres should spend time on supporting candidates to develop this skill. Questions requiring candidates to use calculations also seem to be problematic and again candidates do not attempt these questions. Candidates are providing basic answers and there is a lack of understanding of detail. Also, candidates are making basic mistakes and missing out on marks.

The candidates need to be coached on how to undertake examinations, as well as on the knowledge and understanding implied by the content. An understanding of what is meant by command verbs such as 'identify', 'describe', 'explain' and 'determine' would be a good start. In particular, candidates should recognise that where a question says 'identify and describe' it is more or less always the case that failure to offer a description, no matter how brief, means that no more than half mark allocation can be achieved for that question.

Secondly, centres need to instruct their candidates to read the questions thoroughly, and to ensure that they answer only the actual question set. There were, several examples of where candidates had answered the wrong question entirely. This course of action cannot generate any marks, and centres need to make this very clear to their candidates.

A number of candidates waste valuable time in writing out the question. In the opinion of the examiners, many candidates are clearly not being adequately prepared for the construction techniques section of the paper.

In general, the candidates gain far more marks in the four environmental science questions than they do in the six construction techniques questions. Some candidates are only passing because of the science questions. This is alarming as it implies that the candidates do not understand construction, which is the basis of the qualification.

Question	Syllabus ref	Examiner comments
1(a)	31.55	Reasonably well-answered, with candidates able to identify the components of daylight and provide good supporting sketches. However, about half of those who did so failed to describe the components, which limited the marks available. Some candidates answered the question from the previous series, which obviously gained them no marks whatsoever.

1(b)	31.69	Poorly answered in general, with many candidates making no attempt, and those who did generally described how the lights worked, rather than their colour rendering properties. Candidates are reminded that they must read the question carefully and answer the question asked. There are no marks for answers that do not address the question, no matter how right the content.
1(c)	31.71	Most candidates addressed this question in a very general manner and 'talked around' the subject. This was generally sufficient to award about half marks, but few answered in full.
2(a)	31.58	There was a great deal of confusion surrounding this question. Many candidates wrote about techniques used to control machinery indoors, rather than traffic outdoors, and some concentrated solely on sound insulation techniques without any reference to placement, design, barriers or traffic-calming measures. It was often as if candidates had a prepared answer for 'this kind' of question and that was all they had. High marks are only available for candidates who relate their responses to the scenario provided. Once again, please read the question!
2(b)	31.75	Well-answered, as questions involving decibel calculations. Only two candidates used the 'short' method of determining the answer (doubling the distance four times means a drop of 4×6 dB, giving an answer of $82 - 24 = 58$ dB) and generally concentrated on the long method. Some candidates used formulae other than that given, and generally went wrong as a result. Candidates are advised to use only those formulae given on the formula sheet attached to the paper.
3(a)	31.60	Either very well-answered, with completely correct answers, or poorly answered, with no more than one or two marks being awarded. Candidates must recognise that the procedure is to ascertain the resistance of each component, total the values and take the reciprocal to get the U value. It is completely wrong to determine a U value for each component and then total them. Centres must emphasise the importance of this before entering candidates for this examination in future series.
3(b)	31.86	Generally well-answered, except where candidates confused air conditioning systems with refrigeration systems. Compressors, condensers, evaporators and expansion valves relate to the latter, and did not attract any marks.
3(c)	31.87	Usually well-answered. This topic appears to be well-taught in most centres, as being central to the topic.
4(a)	31.89	Most candidates were able to produce a sketch of the methods of determining pressure, but not many went on to describe the principles on which each is based in a convincing manner. 'Best answered' was manometer, followed by Bourdon Gauge and then piezometer. Some sketches were very basic indeed and this limited the marks available.

4(b)	31.63	Reasonably well-answered, where it was attempted. In some cases every candidate from a centre ignored this question which would seem to imply that the topic had not been taught. There is, as there was in Q2(b), an issue relating to the formula to be used. This was given on the formula sheet provided with the paper, and it is confusing that many candidates used the Chezy formula which was (i) not given and (ii) irrelevant. It is also disappointing to note that some candidates could not transcribe the formula correctly from the sheet to the script. Also, centres must remind their learners that calculations do not give correct answers unless consistent units are used. For example, using diameters in mm and lengths in m is a recipe for disaster.
5	31.12	Most candidates were able to identify methods of obtaining site information, but few described the methods identified in any detail. This has been an issue for many series. Candidates are reminded that, where a question says 'describe', simple identification, on its own, will only attract about half the mark allocated.
6	31.17	The majority of candidates attempted this question but not many provided correct selection of foundation types . The candidates appear to have some knowledge of a range of foundation types, but rarely know the ground conditions that make them suitable for use. Foundations are a big issue in construction and centres are strongly advised to ensure that their learners understand this vital topic, and can produce sketches of them as well.
7	31.27 31.42	The majority of candidates provided a sketch with limited annotation for each of the four items of plant. Generally, the quality of the sketches was poor. Candidates appear to confuse vibrating pokers fused with rammers.
8	31.15	In general, a popular question, with candidates correctly identifying and briefly describing the purpose of each process. The sections on site clearance and groundwater control were generally better answered than those on site preparation and setting out. Centres are encouraged to broaden their approach to this topic to include all of the areas asked in this question.
9	31.22	It appeared that the majority of candidates did not read the question properly as the sketches produced were often related to precast beams and, even, in some cases, columns. It was perhaps fortunate that most of the terminology can be applied to both. The outcome was a poorly answered question with low marks across the board.
10(all)	31.44	A well answered question with virtually all candidates achieving at least half of the marks available. Sections (a) and (c) were generally better answered than section (b).

Forthcoming Exam Dates are:

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