

# 6165-073 Structural Elements, Geology, Soil Mechanics and Hydraulics 4 Principles

Examiners' report – **June 2014**

## **About City & Guilds**

City & Guilds is the UK's leading provider of vocational qualifications, offering over 500 awards across a wide range of industries, and progressing from entry level to the highest levels of professional achievement. With over 8500 centres in 100 countries, City & Guilds is recognised by employers worldwide for providing qualifications that offer proof of the skills they need to get the job done.

## **City & Guilds Group**

The City & Guilds Group includes City & Guilds, ILM (the Institute of Leadership & Management, which provides management qualifications, learning materials and membership services), City & Guilds NPTC (which offers land-based qualifications and membership services), City & Guilds HAB (the Hospitality Awarding Body), and City & Guilds Centre for Skills Development. City & Guilds also manages the Engineering Council Examinations on behalf of the Engineering Council.

## **Equal opportunities**

City & Guilds fully supports the principle of equal opportunities and we are committed to satisfying this principle in all our activities and published material. A copy of our equal opportunities policy statement is available on our website.

## **Copyright**

The content of this document is, unless otherwise indicated, © The City and Guilds of London Institute and may not be copied, reproduced or distributed without prior written consent.

However, approved City & Guilds centres and candidates studying for City & Guilds qualifications may photocopy this document free of charge and/or include a PDF version of it on centre intranets on the following conditions:

centre staff may copy the material only for the purpose of teaching candidates working towards a City & Guilds qualification, or for internal administration purposes

candidates may copy the material only for their own use when working towards a City & Guilds qualification

The Standard Copying Conditions (which can be found on our website) also apply.

Please note: National Occupational Standards are not © The City and Guilds of London Institute. Please check the conditions upon which they may be copied with the relevant Sector Skills Council.

## **Publications**

City & Guilds publications are available from our website or from our Publications Sales department, using the contact details shown below.

Every effort has been made to ensure that the information contained in this publication is true and correct at the time of going to press. However, City & Guilds' products and services are subject to continuous development and improvement and the right is reserved to change products and services from time to time. City & Guilds cannot accept liability for loss or damage arising from the use of information in this publication.

## **City & Guilds**

**1 Giltspur Street**

**London EC1A 9DD**

**T +44 (0)844 543 0000**

**F +44 (0)20 7294 2413**

**[www.cityandguilds.com](http://www.cityandguilds.com)**

**[centresupport@cityandguilds.com](mailto:centresupport@cityandguilds.com)**

# Contents

|          |                                          |          |
|----------|------------------------------------------|----------|
| <b>1</b> | <b>Introduction</b>                      | <b>2</b> |
| <b>2</b> | <b>Feedback on candidate performance</b> | <b>3</b> |
|          | General feedback                         | 3        |
|          | Forthcoming Exam Dates are:              | 4        |

# 1 Introduction

The purpose of this document is to provide centres with feedback on the performance of candidates in the **June 2014** examination for 6165-073 Structural Elements, Geology, Soil Mechanics and Hydraulics 4 Principles.

## 2 Feedback on candidate performance

### General feedback

The following comments are intended to help students 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.

In general the paper was well received by candidate with a significant performing well in the paper. Centres are reminded to teach to the syllabus if candidates are to perform better in this subject.

| Question | Syllabus ref            | Examiner comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | 73.41                   | <p>Most achieved some marks but many only about half of the allocated marks</p> <p>a) The description of discontinuity types was only very briefly attempted by most candidates. Some diagrams were poor in detail.</p> <p>b) Most scored few marks, but few achieved all full marks for the correct identification of the rock types.</p> <p>c) This was poorly attempted by many students, some marks were awarded but responses often were unclear or not specific to the mineral being described.</p>         |
| 2        | 73.50                   | <p>a) Most achieved candidates achieved low marks for this section of the question, with some candidates either left the question blank or gave generic descriptions not specific to the method indicated.</p> <p>b) Most candidates scored low marks. Many candidates simply described a construction site investigation rather than a specific site investigation report concerning soil analysis.</p>                                                                                                          |
| 3        | 73.44<br>73.49          | <p>a) This was a similar question in previous exams this was generally well answered by most candidates and score a few marks. A large number of candidates failed to correctly substitute values into part (ii).</p> <p>b) This was also a similar question in previous exams this was generally well answered by most candidates, often candidates failed to identify that the thrust would occur 1.5 m from the base.</p>                                                                                      |
| 4        | 73.46<br>73.49          | <p>a) Generally well answered by many candidates. Some diagrams were very weak in detail and lacked correct axes.</p> <p>b) Most candidates attempted this question but diagrams often had a vertical axis which did not allow for <math>c_u</math> to be calculated.</p>                                                                                                                                                                                                                                         |
| 5        | 73.58<br>73.64<br>73.73 | <p>a) Generally satisfactorily attempted by most candidates although a significant proportion did not clearly explain the definition of Archimedes' principle clearly. Explanations of Reynolds number were often limited to a formula with no or only brief explanations.</p> <p>b) This was poorly answered by many candidates. Explanations and diagrams were often weak despite similar questions were used in previous series.</p>                                                                           |
| 6        | 73.54<br>73.75          | <p>a) Satisfactorily attempted. A few candidates failed to use a value for <math>g</math> or did not subtract the two relevant values. As this was a question similar in recent series, a significant proportion of students were able to achieve some marks.</p> <p>b) Many candidates' calculations of <math>m</math>, the wetted perimeter area, were incorrect. Marks were awarded for follow through but students often were unable to substitute values into the equation and achieve a sensible value.</p> |

|    |                |                                                                                                                                                                                                                                                                                      |
|----|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7  | 73.65          | <p>a) A similar asked in previous series. A few candidates achieved full</p> <p>b) Many learners were able to start this problem but then got confused with the substitution of values into expressions and the final value of Q was often unrealistic and ultimately incorrect.</p> |
| 8  | 73.13<br>73.14 | Responses to this task were mixed. Candidates often were able to calculate the safe load and the maximum permitted deflection. However, the calculation of the actual deflection for the loading applied did result in many incorrect calculations occurring.                        |
| 9  | 73.13<br>73.14 | This was well attempted by many candidates. Some candidates either calculated the slenderness ratio incorrectly or in calculating the safe load poor manipulation of indices took place resulting in an incorrect load being calculated.                                             |
| 10 | 73.15<br>73.16 | This was attempted well by many candidates. Most candidates were able to calculate the total load and maximum moment correctly. Many were then able to calculate the correct design of reinforcement. In a small number of cases values did not correspond to previous calculations. |

### **Forthcoming Exam Dates are:**

03 December 2014

10 June 2015

---

**Published by City & Guilds**  
**1 Giltspur Street**  
**London**  
**EC1A 9DD**  
**T +44 (0)844 543 0000**  
**F +44 (0)20 7294 2413**  
**[www.cityandguilds.com](http://www.cityandguilds.com)**

**City & Guilds is a registered charity**  
**established to promote education**  
**and training**