

**BCS Higher Education Qualification**

**Profession Graduate Diploma**

**Date** November 2020

**EXAMINERS' REPORT**

**Web Engineering**

<b>Question number: A1</b>
<b>Syllabus area: 4.1, 4.4 &amp; 4.5</b>
<b>Total marks allocated: 25</b>
<b>Examiners' Guidance Notes</b>
<p>Answered by nearly all candidates who demonstrated a much better understanding of SFA and 2FA than http and https, hence the rather lower than expected average mark (14.94).</p> <p>The key to this question (although not specifically asked for) was that https protects data while it is being transmitted, but it is vulnerable within both the browser and server and 2FA provides a good method of reliably identifying the user, so long as the presentation of the two factors is truly independent (ie that if an intruder broke into one authentication they would not generally have access to the other – hence the use of OTPs and mobile phones etc). 2FA does little to assure the user that the site is genuine, as they may register with a fake site and then everything apparently works fine. Same with https – anyone could apply and receive a security key, even the bad guys. None of this was clearly explained by the candidates, who only vaguely referenced it with a lot of irrelevant or uninformed comment.</p>

**Question number: A2**

**Syllabus area: 1.1, 2.2 & 2.3**

**Total marks allocated: 25**

**Examiners' Guidance Notes**

This question was attempted by just over 50% of candidates whose performance was marginally less than those attempting A1.

The first part considering FTP, BitTorrent and peer-to-peer was a little disappointing because few candidates seemed to understand the fundamental difference in that FTP is single point to multiple clients, and therefore at risk of both single point failure and overload, BitTorrent is peer-to-peer with files broken up into many small pieces that are reintegrated by the client software and so is much more efficient, faster & more resilient and does not have to have the original source online. Whilst it is extensively used to share illegally pirated copyright material it is an important way of distributing large, popular software distributions, such as for example Linux versions. P2P was poorly explained with no mention of the reliability of avoiding the use of a single server, although many of the diagrams implied the ability to connect indirectly through transit hosts (the old uucp configuration). There was none the less no mention of the reliability improvement from having multiple connection routes.

Candidates did not clearly differentiate the different functions of the files .htaccess and .htpasswd.

The discussion of REST architecture was intended to show a clear understanding of architectural methods, which few candidates actually demonstrated.

**Question number: B3**

**Syllabus area: 1.3, 2.4 & 4.1**

**Total marks allocated: 25**

**Examiners' Guidance Notes**

This question was attempted by just over 50% of candidates with a slightly lower average mark (just under 13.5). The candidates had obviously revised SQL injection attacks but did not seem to be able to compare and contrast file-based and database-based file management systems. This is disappointing, as this is generally considered to be a fundamental level 6 skill.

The security part on how to protect a database backend to a web server was very poorly done, with few candidates considering the use of firewalls and those that did not discussing the filtering out of all attempts to access apart from the web server, and certainly not allowing any from the outside web.

<b>Question number: B4</b>
<b>Syllabus area: 3.1 &amp; 3.2</b>
<b>Total marks allocated: 25</b>
<b>Examiners' Guidance Notes</b>
<p>This question was attempted by 50 candidates who made a reasonable attempt, with 38 passing. Unfortunately there were very few complete answers giving an average of only 13.10 (52.4%). The description of DOMs was often very incomplete and inadequate reasons were frequently given for using one. Part C was frequently very poorly done with inadequate structures to support a list that followed the example given in the question. There was also inadequate use of the qualifiers meaning that they did not follow the example, which had been designed so that one of each should be included. The last part proved to be a major test for many candidates, with few showing clearly how an alternative and default are coded.</p>

<b>Question number: B5</b>
<b>Syllabus area: 3.1, 3.2, 5.5, 7.1 &amp; 7.3</b>
<b>Total marks allocated:</b>
<b>Examiners' Guidance Notes</b>
<p>This question was attempted by 26 candidates of whom 20 passed. Again, there were very few very good answers and the average was the lowest for the paper (12.69).</p> <p>Many candidates read CGI as the graphics standard, rather than Common Gateway Interface, as intended. I accepted both. Examples were often missing.</p> <p>The key issue with part b was that all the systems present user generated content, rather than static content as in the traditional web. Each has its uses and typical examples were generally given. Many candidates failed to explain that blogs often have a means by which readers can comment on the material posted.</p>