

# THE BRITISH COMPUTER SOCIETY

## THE BCS PROFESSIONAL EXAMINATION Professional Graduate Diploma

### WORLD WIDE WEB – BEYOND THE BASICS

3<sup>rd</sup> May 2005, 10.00 a.m.-1.00 p.m.

Answer THREE questions out of FIVE. All questions carry equal marks.  
Time: THREE hours.

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

#### Appendix attached at back for use in Question 3.

1. a) Expand each of the following acronyms and define the *meaning* of each term:
- i) TCP/IP
  - ii) FTP
  - iii) HTTP
  - iv) IMAP
  - v) HTML
- (5 x 1 marks)**
- b) The current Internet Protocol allows for approximately 4,000 million unique addresses -which is quickly becoming exhausted. Define what is meant by *IPv6* and *NAT* (sometimes known as IP masquerading). How can these help to solve the address shortage? **(4 marks)**
- c) Explain what is meant by *webcasting*? **(1 mark)**
- i) Compare and contrast webcasting with traditional ‘over-the-air’ broadcasting. **(3 marks)**
  - ii) What impact has radio webcasting had on the business practices of traditional radio broadcasters (e.g. the British Broadcasting Corporation)? **(4 marks)**
  - iii) *Making specific reference to file distribution, file sharing and video streaming technologies, discuss (with real examples) how the web distribution of music, film and television material has impacted on producers and consumers. (Your answer should consider the technologies involved and the economic social and ethical issues.)* **(8 marks)**
2. All websites are vulnerable to attack of varying degrees and type to the client, the server, and the network itself.
- a) Explain, with a suitable realistic example in each case, what is meant by:
- i) *denial of service* attack **(2 marks)**
  - ii) *buffer overrun* vulnerability **(3 marks)**
  - iii) *phishing* (also known as password harvesting fishing) **(3 marks)**
- b) i) Why should sensitive information, such as credit card numbers, be encrypted before transmission over the Web? **(3 marks)**
- ii) List 3 *online* methods of paying for goods and services and outline, from a security point of view, the advantages and disadvantages of each method. **(6 marks)**
- c) User profiling and tracking is commonplace on the Web. Discuss, with appropriate examples, the positive and negative aspects of these activities. **(8 marks)**

**Turn over]**

**3. Refer to the Appendix at the back of the question paper for the Figures quoted in this question.**

Cascading Style Sheets (CSS) are used to separate content from presentation.

- a) i) Give THREE reasons why it is important to separate content from presentation. **(3 marks)**
- ii) What are the advantages of defining and linking to an external CSS file, as opposed to simply defining CSS in the header of an HTML document? **(3 marks)**
- b) Different cultures may interpret non-content issues in particular ways (for example, in China red is associated with good fortune but in nearby Japan it is associated with anger). Briefly explain (using a different example) how CSS could be used to adapt a web page to other cultures by altering these presentational issues. **(3 marks)**
- c) The following section exercises your ability to manipulate CSS and change the presentation of a webpage. The HTML source is given in **Figure 1**, and a visual rendering of the page (without any stylesheet) is given in **Figure 2**.
- i) The stylesheet bcs.css (given in **Figure 3**) has now been attached to the web page. Using the template in **Figure 4** (copied into your answer booklet), draw a diagram to illustrate what the page will now look like when it is loaded in a browser window. (You should state what browser you are assuming use of and annotate any areas of your diagram that may be unclear, such as fonts or colours). **(9 marks)**
- ii) A designer has given you a mock-up of how they wish the page to appear (see **Figure 5**). Modify the stylesheet bcs.css to reflect these alterations. You should list only the changes required (and line number from bcs.css) in your answer. **(7 marks)**

- 4. a) In the context of digital images, what is meant by watermarking? **(2 marks)****
- i) Some websites attempt to protect images using methods such as blocking the right mouse click, removing the menu bar or “encrypting” the source code with JavaScript. Discuss, with reasons, the effectiveness of each of these techniques in preventing the user from saving a copy of the image. **(6 marks)**
- b) How is it possible on the server-side to restrict access to a web page to certain people or networks? **(2 marks)**
- i) With reference to real-life initiatives (such as Internet Content Rating Association and the PICS standard) and products (such as Internet filters), describe the different approaches to restricting access to Web resources on the client-side. **(4 marks)**
- c) The Web has had a positive influence in many areas of society. However, as with all technology, it can be used for purposes which may be viewed as immoral, unethical and, in some cases, illegal.
- i) List, with a brief rationale for the reason, an example of a website that may be viewed as:
- Immoral/Unethical
  - Illegal
- (You should provide one distinct example for each category.) **(4 marks)**
- ii) Identify and evaluate possible measures that can be taken to minimise the impact of questionable sites on society. **(7 marks)**

5. a) The WWW is used for a diverse range of purposes.
- i) Identify FIVE distinct categories of website (in terms of intended purpose) and, for each category, identify an appropriate real-life example. **(5 marks)**
  - ii) Considering any TWO of the categories identified above, discuss how one can measure the "success" of each site. For each category, you should identify at least four criteria (and a short justification) that could be sensibly used to measure "success". **(8 marks)**
- b) i) Define the terms *load testing* and *performance testing* when applied to a website. What (if any) are the differences between them? **(5 marks)**
- ii) Given a B2C website (e.g. <http://www.amazon.com>), devise a plan for testing the site, with specific emphasis on load and performance testing. **(7 marks)**

