

THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATIONS BCS Level 5 Diploma in IT

THE INTERNET & WORLD WIDE WEB

23rd April 2008, 10.00 a.m.-12.00 p.m.

Answer FOUR questions out of SIX. All questions carry equal marks.

Time: TWO hours.

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

Calculators are NOT allowed in this examination.

1. a) <http://www.bcs.org.uk/index.html> is a typical URL. Define the acronym URL and explain the significance of the various elements in this example.
(5 marks)
- b) i) Why are IP addresses central to the functioning of the Internet?
(2 marks)
- ii) Explain the difference between static and dynamic IP addresses and indicate when each is appropriate.
(4 marks)
- iii) *Network Address Translation* (NAT) is one solution to the shortage of IP addresses. Explain when it can be used and how it addresses the problem.
(4 marks)
- iv) State another solution to the shortage of IP addresses and briefly explain how it addresses the problem.
(2 marks)
- c) i) Explain how the *Domain Name System* (DNS) allows computers to contact each other to exchange email or display web pages.
(5 marks)
- ii) Give **three** reasons for DNS errors.
(3 marks)

Turn over]

2. a) i) Give **three** examples of the use of the client-server protocols on the Internet.
(6 marks)
- ii) Give three methods of making an Internet connection and for each method state when it would be appropriate and when it would be inappropriate.
(9 marks)
- b) i) Electronic mail (e-mail) relies on a number of protocols to facilitate the sending, transfer and receiving of mail. State three such protocols and briefly describe their role.
(6 marks)
- ii) How does Webmail differ in the protocols that it uses?
(2 marks)
- iii) Why is the practise of operating an open mail relay frowned upon?
(2 marks)
3. You are a member of a Web design team working on a website for an on-line retail organisation. The website provides potential customers with product information and has an interactive order form through which items can be purchased.
- a) Give **six** reasons why your team would want to evaluate the website before it is made live to customers on the Web.
(12 marks)
- b) In designing the order form, how might you arrange to reduce user interaction errors and what mechanisms might be incorporated to allow users to correct their errors when completing the form?
(13 marks)
4. a) What is an Internet *firewall* and what is it used for?
(4 marks)
- b) Give **five** forms of attack that web servers on the Internet are likely to face and for each give a method of protection.
(10 marks)
- c) How can a demilitarized zone (DMZ) play a part in protecting an organisation's LAN and name the type of services that are located in the DMZ?
(5 marks)
- d) Many users assume that they are anonymous when using the Internet. Where are their records of usage likely to be stored?
(6 marks)

5. There is a range of formats to deliver text, graphics, sound, animation and video on the Internet.
- a) What are the issues that need to be addressed when multimedia content is delivered on the Internet?
(9 marks)
 - b) Which file formats are you most likely to use for such delivery? Justify your choices.
(8 marks)
 - c) List appropriate authoring tools, that are widely available, to generate the file formats you mentioned in part (b).
(4 marks)
 - d) Define the terms *lossy* and *lossless* with respect to image compression.
(4 marks)

6. a) Complete a table in the following format to show **three** benefits of having dynamic content and **three** benefits of having static content in a Website.

	Dynamic	Static
Benefit 1		
Benefit 2		
Benefit 3		

(Hint: Keep each listed benefit to a short sentence or point.)

(12 marks)

- b) Describe the benefits of including a scripting language on the client's browser.
(6 marks)
- c) What drawbacks are there in relying on client-side scripting?
(3 marks)
- d) Describe the two ways that server-side scripts can accept information passed to them from a Web form.
(4 marks)