BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

PRINCIPLES OF INTERNET TECHNOLOGIES

Tuesday 3rd May 2011 - Morning
Answer **any** FOUR questions out of SIX. All questions carry equal marks.
Time: TWO hours.

Answer any Section A questions you attempt in Answer Book A
Answer any Section B questions you attempt in Answer Book B

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

Calculators are **NOT** allowed in this examination.

Section A
Answer Section A questions in Answer Book A

A1. a) i) Explain the role of ADSL in broadband Internet access.
(5 marks)

ii) What is "the local loop"?
(2 marks)

iii) What is local loop unbundling?
(2 marks)

iv) Internet Service Providers often use the term "up to", e.g. speeds of up to 8Mbps, when they advertise their services. What are the factors which make the use of this term necessary?
(6 marks)

b) i) Why is there a growing demand for high-speed Internet access through mobile devices such as smart phones?
(6 marks)

ii) Outline TWO communication technologies which allow such access.
(4 marks)

A2. a) For each of the following, state what the abbreviation stands for and give an example of its use:

i) HTTP
ii) SMTP
iii) POP3
iv) DHCP
vi) NNTP
vii) FTP

(12 marks)

b) What is client-server architecture? Illustrate your answer by giving THREE different examples of its use on the Internet.

(5 marks)

c) The world is running out of IPv4 addresses.

i) Give TWO reasons for this.

(2 marks)

ii) State TWO potential solutions to this problem and explain how they resolve it.

(6 marks)

A3. a) i) What is an open mail relay?

(2 marks)

ii) Explain why some will welcome this whilst others will frown upon it.

(4 marks)

b) i) Explain the differences between dynamic and static IP addressing.

(2 marks)

ii) Explain the differences between dynamic and static routing.

(2 marks)

c) i) Explain how a web search engine builds its database and resolves a query.

(4 marks)

ii) Explain THREE problems faced by web search engines.

(3 marks)

iii) Explain why two different search engines may provide different results when provided with the same search term.

(3 marks)

d) Outline what the W3C means by web accessibility and explain why it is important.

(5 marks)

Section B

Answer Section B questions in Answer Book B

B4. a) Using only a labelled diagram, illustrate the architecture of a typical AJAX web application, showing the relationships between each of the elements in the system and how data is passed between them.

(11 marks)

b) Identify the client-side scripting language used in AJAX web applications and briefly describe the role it serves.

(4 marks)

c) Identify a common server-side scripting language used in AJAX web applications and briefly describe the role it serves.

(4 marks)

d) For each of the following, define and briefly explain its purpose:

i) Apache
ii) Web User Agent
iii) DOM

(6 marks)

B5. a) In relation to Internet security, briefly explain:

i) what is a firewall?
ii) a strength and a weakness of using a firewall.

(4 marks)

b) Identify FOUR common Internet security risks and briefly explain the measures that can be taken to guard against each.

(12 marks)

c) In the context of web server configuration, briefly state:

i) what is a .htaccess file?
ii) THREE uses for a .htaccess file.

(9 marks)

B6. a) i) State what the term XMLHTTPRequest stands for and briefly explain how it is commonly used in web authoring.

(5 marks)

ii) Identify and briefly describe THREE of the request methods commonly supported by user agents that support XMLHTTPRequest.

(9 marks)

b) i) Using XML data modelling, model a movie's data source in XML.

- Provide XML markup for the data source
- Provide XML markup for three example movies
- Model the movie title, lead actor and director for each film

(8 marks)

ii) With reference to the XML example in b) i), what task would the following JavaScript statement perform?

```
getElementsByTagName("director")[0].childNodes[0].nodeValue
```

(3 marks)