

BCS The Chartered Institute for IT  
THE BCS PROFESSIONAL EXAMINATIONS  
BCS Level 5 Diploma in IT

**PRINCIPLES OF INTERNET TECHNOLOGIES**

Thursday 29<sup>th</sup> April 2010 - Morning  
Answer 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.
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**Section A**

Answer Section A questions in Answer Book A

- A1. a) i) Explain the role of a router in the management of Internet traffic. **(5 marks)**  
ii) Explain the differences between dynamic and static routing. **(5 marks)**  
iii) Using a diagram for each, show the difference between unicast, broadcast, anycast and multicast. Which would most commonly be encountered on the Internet? **(5 marks)**
- b) Define the term *client-server architecture* and give **three** examples of its use on the Internet. **(5 marks)**
- c) Outline the role of protocols as applied to the Internet and name **three** protocols frequently used on the Internet. **(5 marks)**
- A2. a) For each of the following, state what the term stands for AND briefly explain its purpose:  
i) HTML  
ii) CSS  
iii) W3C  
iv) URL  
v) HTTP **(10 marks)**
- b) There are a number of protocols that play a part in sending and receiving email. Some were designed specifically for email and others are generic Internet protocols. Name **two** email-specific protocols and **two** generic Internet protocols and explain their roles in the context of conventional (non-webmail) email. **(8 marks)**
- c) i) Explain how the Domain Name System allows computers to contact each other to exchange email or display web pages. **(4 marks)**

ii) State **three** distinct causes of DNS errors. (3 marks)

A3. a) i) What is web accessibility as defined by the W3C? (2 marks)

ii) Why is web accessibility important? (2 marks)

iii) Outline **three** things that can be done to improve the accessibility of websites. (6 marks)

b) i) Explain the role of a web crawler (spider). (4 marks)

ii) State **three** types of information that might be indexed by indexing software. (3 marks)

iii) Explain why two different search engines may return different results when given the same search terms. (2 marks)

c) For each of the following, state what the term stands for and give an example of its use:

i) FTP

ii) Telnet

iii) DHCP

(6 marks)

### Section B

Answer Section B questions in Answer Book B

B4. a) What do the following terms stand for and what is the purpose of each?

i) XML

ii) XSLT

iii) PHP

iv) DOM

(8 Marks)

b) Identify the languages and standards used to produce a **static** website. (2 marks)

c) Identify the languages and standards used to produce a **dynamic** website. (4 marks)

d) How does an AJAX website differ from other types of dynamic websites? (3 marks)

e) Identify the purpose of the following text and list the elements that make it up:  
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"  
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
(8 marks)

B5. a) Identify **three** common Internet security risks and explain the measures that can be taken against each. (9 marks)

- b) In the context of Internet security:
- i) What does TLS mean and what is its purpose?
  - ii) What does SSL mean and what is its purpose?
  - iii) How do TLS and SSL relate to each other?
- (6 marks)**

- c) In relation to Internet security and NAT:
- i) What does the term NAT stand for?
  - ii) How might NAT help with Internet security?
  - iii) How effective is NAT for Internet security?
  - iv) What is network masquerading?
  - v) What is Port forwarding?
- (10 marks)**

- B6. a) i) What is domain name registration?  
ii) Why is domain name registration required?  
iii) What is the process for registering a domain name?
- (6 marks)**

- b) In the context of website hosting, what is meant by the following:
- i) Web hosting service;
  - ii) Reseller hosting;
  - iii) Dedicated hosting;
  - iv) Uptime; and
  - v) cPanel?
- (10 marks)**

- c) A good quality hosting service would provide access to which languages and services?
- (4 marks)**

- d) Consider the following XML markup:

```
1      <?xml version="1.0" encoding="ISO-8859-1"?>
2      <people>
3          <person>
4              <title>Mr</title>
5              <firstname>Bob</firstname>
6              <familyname>Dylan</familyname>
7              <year born>1941</year born>
8          </person>
9          <person>
10             <title>Ms</title>
11             <firstname>Ada</firstname>
12             <familyname>Lovelace</familyname>
13             <yearborn>1852</yearborn>
14         </person>
15     </People>
```

- i) Identify **three** errors in the XML markup above.
  - ii) Add a field to store the “occupation” of each person (in the example markup this is “songwriter” and “computer programmer” respectively).
- (5 marks)**