THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATIONS
BCS Level 5 Diploma in IT

PRINCIPLES OF INTERNET TECHNOLOGIES

2nd May 2007, 2.30 p.m.-4.30 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)* *i)* Define the term *web search engine*. **(2 marks)**

    ii) Explain how a web search engine resolves a query. **(3 marks)**

    iii) Highlight THREE challenges faced by web search engines. **(3 marks)**

    b) The WWW is used for a diverse range of purposes. Identify FIVE distinct categories of website (in terms of intended purpose) and, for each category, identify an appropriate real-life example. **(5 marks)**

    c) Explain the terms *weblog* (often known as *blog*) and *wiki,* highlighting their common features and their differences. **(6 marks)**

    d) What is the role of an RSS feed on a webpage? **(6 marks)**

2. *a)* Expand each of the following and define their meaning:
    i) TCP/IP
    ii) FTP
    iii) HTTP
    iv) IMAP
    v) HTML **(10 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 in solving the address shortage? **(5 marks)**

    c) Explain the role and architecture of the Domain Name Service (DNS) in the operation of the Internet. **(5 marks)**

    d) Building on, but not repeating your answer to *c)*, explain how the HTTP protocol facilitates the stages between a user requesting and receiving a web page. **(5 marks)**

3. *a)* Given the following HTML file that incorporates JavaScript code:
Draw what the browser window will display:

    i)   initially on loading   **(4 marks)**

    ii)   when the first main option is chosen   **(3 marks)**

    iii)   when the second main option is chosen along with the second sub- option   **(3 marks)**

b)   When is it appropriate to use client-side scripting or to use server-side scripting? Illustrate your answer with suitable examples. [Do NOT write any code.]   **(10 marks)**

c)   Describe the issues associated with browser compatibility for client-side scripting languages.   **(5 marks)**

```html
1 :<html>
2 :  <head>
3 :    <title>Viewing Options</title>
4 :    <script LANGUAGE="JavaScript">
5 :    <!--
6 :    function JumpPointer(){
7 :      var selection =
         document.f1.Sites.options[document.f1.Sites.selectedIndex].text;
8 :      document.f1.url.length = null;
9 :      if ( selection.match(/Educational/) ) {
10:        document.f1.url.options[0] = new Option('A', 'Visit A');
11:        document.f1.url.options[1] = new Option('B', 'Visit B');
12:      } else {
13:        document.f1.url.options[0] = new Option('X', 'Visit X');
14:        document.f1.url.options[1] = new Option('Y', 'Visit Y');
15:      }
16:      followup();
17:    }
18:    function followup(){
19:      document.f1.result.value = null;
20:      document.f1.result.value =
         document.f1.Sites.options[document.f1.Sites.selectedIndex].value + "-"
         + document.f1.url.options[document.f1.url.selectedIndex].value;
21:    }
22:    //-->
23:    </script>
24:  </head>
25:  <body onLoad="javascript:JumpPointer();">
26:    <form name="f1">
27:      <table border="1">
28:        <tr>
29:          <td>Please Choose an option</td>
30:          <td><select name="Sites" onChange="javascript:JumpPointer();">
31:          <option value="Education">Educational</option>
32:          <option value="Fun" selected>Funny</option>
33:          </select></td>
34:        </tr>
35:        <tr>
36:          <td> </td>
37:          <td><select name="url" onChange=" javascript:followup();">
38:          </select></td>
39:        </tr>
40:        <tr>
41:          <td colspan="2" align="center">
42:          <textarea name="result" rows="2" cols="20"
43:          readonly></textarea></td>
44:        </tr>
45:      </table>
46:    </form>
47:  </body>
48:</html>
```

4. *a)* Define and distinguish between the terms *intranet*, *Internet* and *extranet*. **(5 marks)**

b) Highlight advantages and disadvantages of extranets for a company. **(5 marks)**

c) Describe the principle features of a portal, with reference to an example. **(5 marks)**

d) What is the role of the W3C? **(5 marks)**

e) Define the term *website accessibility* and give THREE examples of methods to improve access. **(5 marks)**

5. *a)* Briefly explain the purpose of each of the following:
- SMTP Server
- Proxy Server
- POP3 Server
- DNS Server
- DHCP Server **(10 marks)**

b) Explain the technical differences between webmail and conventional email systems. **(5 marks)**

c) Give an example of ONE current method of receiving email in a mobile environment and evaluate the advantages and disadvantages of your selected method. **(5 marks)**

d) "Video telephony is the killer application for 3G". Discuss the validity of this statement. **(5 marks)**

6. *a)* Outline THREE distinct methods by which a home user can connect his/her PC to the Internet. **(5 marks)**

b) List FOUR factors that a user should consider when choosing a method of connecting his/her PC to the Internet. **(6 marks)**

c) Evaluate EACH of the methods identified in part *a)* against EACH of the factors identified in part *b)* Present your answer as a table, e.g.

	Factor One	**Factor Two**	**Factor Three**	**Factor Four**
Method One				
Method Two				
Method Three				

(14 marks)