

BCS THE CHARTERED INSTITUTE FOR IT
BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT
PRINCIPLES OF INTERNET TECHNOLOGIES

Friday 27th March - 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)** In relation to Web authoring, expand each of the following terms, as necessary and describe the role they play:
- i) HTML
 - ii) CSS
 - iii) JavaScript
 - iv) PHP
 - v) MySQL
- (5 marks)**
- b)** Show the relationship between the technologies in part a) using a sketch of a client-server model that shows where each of the above technologies reside and the connections between them.
- (10 marks)**
- c)** Consider the following JavaScript function and identify 10 errors:

```
getCookie(){  
    var start = document.cookie.indexOf(name + "=");  
    var len = start + name.length + 1;  
    if ((!start) && (name != cookie.substring(0,  
        name.length))) {  
        return null;  
    }  
    if (start == -1)  
        return null  
    var end = document.cookie.index Of('; ' len);  
    if (end = -1)  
        end == document.cookie.length;  
    unescape(document.cookie.substring(len, end));  
}
```

(10 marks)
[Turn Over]

- A2.**
- a) State what the term XMLHttpRequest stands for and briefly explain how it is commonly used in Web development. Identify ONE strength and ONE weakness of the approach. **(5 marks)**
 - b) 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. **(10 marks)**
 - c) In relation to XMLHttpRequest, briefly describe the purpose of a 'request method' and identify and briefly describe THREE of the request methods commonly supported by user agents that support XMLHttpRequest. **(10 marks)**
- A3.** Consider the HTML markup and CSS style sheet listed at the end of this question.
- a) Identify FIVE errors in the HTML markup. **(5 marks)**
 - b) Identify FIVE errors in the CSS style sheet. **(5 marks)**
 - c) In relation to making use of the CCS provided:
 - i) Write the HTML markup needed to allow the HTML markup to make use of the CSS style sheet and indicate the line number it would be inserted after.
 - ii) What term is used to refer to this method of applying a style sheet to HTML markup?
 - iii) Identify TWO alternative methods of applying style sheet rules to HTML markup. **(5 marks)**
 - d) Briefly describe the effect that each of the following styles defined in the CSS provided will have on the HTML markup provided:
 - i) html style
 - ii) h1 style
 - iii) h2 style
 - iv) p style
 - v) the three a styles **(5 marks)**
 - e) A CSS class name panel is included in the style sheet and used in the HTML markup provided:
 - i) What effect does this panel class have on the layout of the rendered HTML elements?
 - ii) Identify a significant problem with the provided style sheet in relation to responsive Web design.
 - iii) Briefly state why responsive Web design is important. **(5 marks)**

cricket.html - HTML Markup for question A3

(line numbers have been added to ease making reference to the code in your answers)

```
1  !doctype html
2  <html>
3
4  <head>
5      <title>Cricket for beginners</title>
6      <link rel="stylesheet" href="cricket.css">
7
8  </head>
9
10 <body>
11
12     <h1>Cricket for beginners
13
14     <div>
15         <p>
16             Description of cricket goes here...
17         </p>
18     </div>
19
20     <div class="panel">
21         <h2><a href="cricketpitch.html">Cricket pitch</a></h2>
22         <ul>
23             <li>Wickets</li>
24             <li>Creases</li>
25             <li>Playing surface</li>
26             <li>Stumps</li>
27             <li>Bails</li>
28             <li>Bat and ball</li>
29         </ul>
30     </div>
31
32     <div class="panel">
33         <h2><a href="rulesofplay.html">Rules of play</a></h2>
34         <ul>
35             <li>Rules</li>
36             <li>Umpires</li>
37             <li>scorers</li>
38         </ul>
39     </div>
40
41     <div class="panel">
42         <h2><a href="teamstructure.html">Team structure</a></h2>
43         <ul>
44             <li>Batsman</li>
45             <li>Bowler</li>
46             <li>Captain</li>
47             <li>Wicket-keeper</li>
48             <li>Fielder</li>
49         </ul>
50     </div>
51
52     <div class="panel">
53         <h2><a href="gameplay.html">Game play</a></h2>
54         <ul>
55             <li>Innings</li>
56             <li>Overs</li>
57             <li>Bowling</li>
58             <li>Fielding</li>
```

[Turn Over]

```

59         <li>Batting</li>
60         <li>Runs</li>
61     </ul>
62 </div>
63
64 </body>
65
66 </html>

```

cricket.css - CSS Style Sheet for question a3

(line numbers have been added to ease making reference to the code in your answers)

```

1  html {
2      color: #000;
3      font-size: 1em;
4      line-height: 1.2;
5  }
6
7  h1 {
8      font-family: sans-serif;
9      font-size: 2em;
10     color: #fff;
11     background-color: #494;
12     min-height: 250px;
13 }
14
15 h2 {
16     font-family: sans-serif;
17     font-size: 1.25em;
18 }
19
20 p
21     font-family= serif;
22
23
24 A {
25     color: #494;
26     text-decoration: underline;
27 }
28
29 a:hover {
30     color: 7c7;
31     text-decoration: none;
32 }
33
34 a active {
35     color: #7c7;
36     text-decoration: none;
37 }
38
39 .panel {
40     float:left;
41     margin: 10px;
42     padding:5px;
43     min-width: 200px;
44
45 }

```

Section B

Answer Section B questions in Answer Book B

- B4.**
- a) The terms Internet and World Wide Web are frequently used as if they are the same thing. Give a definition for each term that makes the distinction clear. **(4 marks)**
 - b) Give three examples of the use of the client-server model on the Internet. Ensure that you have made it clear which is the client and which is the server in your answer. **(6 marks)**
 - c) Give three methods of establishing a data connection to an Internet service provider. For each, give an example of a situation when the method would be appropriate and an example of a situation when the method would be inappropriate. **(9 marks)**
 - d)
 - i) Define the term web portal and give an example.
 - ii) Outline the main characteristics of a portal.
 - iii) Give two application areas for portals. **(6 marks)**
- B5.**
- a) What do the following terms stand for?
 - i) DNS
 - ii) XML
 - iii) FTP
 - iv) GIF
 - v) HTTP
 - vi) NAT **(6 marks)**
 - b) Define and briefly explain the role of:
 - i) ISP
 - ii) W3C
 - iii) ICANN
 - iv) ISOC **(8 marks)**
 - c) Explain what is meant by:
 - i) a packet switched network
 - ii) a circuit switched networkWhich of these applies to the Internet? **(5 marks)**
 - d) Explain the role of a web crawler (spider). **(4 marks)**
 - e) Explain why two different search engines may return different results when given the same search terms. **(2 marks)**
- B6.**
- a) Explain the role of DNS in the operation of the Internet. **(5 marks)**
 - b) State and explain the specialist email protocols used in the sending and retrieving of an email. **(4 marks)**
 - c)
 - i) Explain the role of VDSL in broadband Internet access. **(5 marks)**
 - ii) What is the main advantage of VDSL compared to ADSL? **(1 mark)**
 - d) Outline TWO routing methods used on the Internet. **(4 marks)**
 - e)
 - i) Explain the main reason for the introduction of IPv6. **(3 marks)**
 - ii) What is the importance of NAT in the context of IPv4? **(3 marks)**