

**BCS THE CHARTERED INSTITUTE FOR IT**  
**BCS HIGHER EDUCATION QUALIFICATIONS**  
**BCS Level 5 Diploma in IT**

**PRINCIPLES OF INTERNET TECHNOLOGIES**

Friday 30<sup>th</sup> March 2012 - 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 <b>NOT</b> allowed in this examination.
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**Section A**

Answer Section A questions in Answer Book A

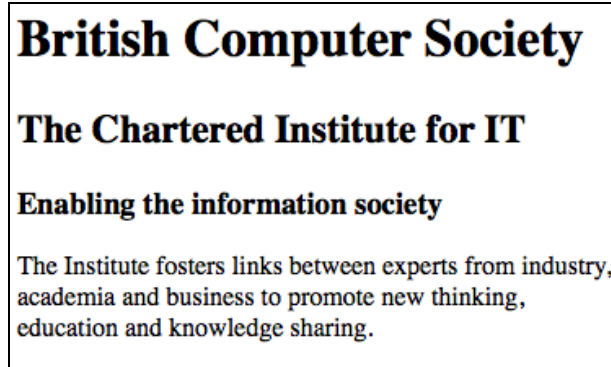
- A1. a) Explain the role each of the following technologies plays in delivering a dynamic website:
- i) HTML
  - ii) CSS
  - iii) JavaScript
  - iv) DOM
  - v) PHP
  - vi) XML
- (12 marks)**
- b) Using only a labelled diagram, illustrate the architecture of a typical dynamic client-server website, showing the relationships between each of the elements in the system and how data is passed between them.
- (10 marks)**
- c) How does an AJAX website differ from other types of dynamic websites?
- (3 marks)**
- A2. a) In the context of 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)**
- b) Explain what is meant by:
- i) cryptosystem
  - ii) public key cryptography
  - iii) digital certificate
  - iv) certificate authorities
- (8 marks)**

**Turn over]**

- c) In the context of computer security:
- i) What is meant by the term *rootkit*?
  - ii) How can the presence of a rootkit be detected?
  - iii) What action should be taken on finding a rootkit installed?
  - iv) How can the installation of a rootkit be prevented?

(7 marks)

- A3. a) Write HTML markup to produce the following output:



(5 marks)

- b) i) What is the JavaScript language most commonly used for in web development?
- ii) Identify and correct FIVE errors in the JavaScript code below:

```
<script type="text/javascript">
    var start = "<p>";
    var end = "</p>";
    for i=1; i<=10; i++ {
        if (i%2) {
            document.write(start , i , end);
        }
    }
</script>
```

- iii) What is the function of the corrected code?
- iv) Show the output from the corrected code.

(9 marks)

- c) Provide example CSS rules to demonstrate how the following can be achieved in CSS:
- i) Group the HTML elements `h1`, `h2` and `h3` and assign them the font style `"strong"`.
  - ii) Define a Class Selector to align text differently for two classes of paragraph.
  - iii) Define an id Selector that aligns text to the centre.

(6 marks)

d) Consider the following XML markup:

```
1      <?xml version="1.0" encoding="ISO-8859-1"?
2      <cricket ground history>
3          <stadium>
4              <name>Eden Gardens</name>
6              <matches>35</matches>
7          </stadium>
9              <name>Feroz Shah Kotla</name>
11             <matches>29</matches>
12         </stadium>
13     </cricket ground history>
```

- i) Identify THREE errors in the XML markup above.
- ii) Add a field to store the "city" in which each cricket ground is located.  
**(5 marks)**

### Section B

Answer Section B questions in Answer Book B

- B4. a) i) Briefly outline the role of a proxy server. **(2 marks)**
- ii) State THREE distinct uses of a proxy server. **(3 marks)**
- b) i) Briefly outline the role of a DNS server. **(2 marks)**
- ii) Give THREE distinct reasons for DNS error messages. **(3 marks)**
- c) i) Briefly outline the role of a DHCP server. **(2 marks)**
- ii) Are DHCP servers an essential part of the Internet? Justify your answer. **(3 marks)**
- d) i) What is client-server architecture? **(2 marks)**
- ii) What is peer-peer architecture? **(2 marks)**
- iii) What are the advantages and disadvantages of each? **(4 marks)**
- iv) Which of these architectures is most usually found on the Internet? Justify your answer. **(2 marks)**

Turn over]

- B5. a) What do the following terms stand for and what is the purpose of each?
- i) ftp
  - ii) http
  - iii) https
  - iv) smtp
  - v) ntp
  - vi) LDAP
- (12 marks)**
- b) Define and briefly explain the role of:
- i) W3C
  - ii) IETF
  - iii) RFC
  - iv) IAB
- (8 marks)**
- c) Define the term *website accessibility* and give THREE examples of methods to improve access.
- (5 marks)**
- B6. a) Explain what is meant by:
- i) A *packet switched network*; and
  - ii) A *circuit switched network*.
- Which of these applies to the Internet?
- (5 marks)**
- b) 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)**
- c) What are the main technical characteristics of broadband Internet access using ADSL?
- (10 marks)**