

# THE UNIVERSITY OF AUCKLAND

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**SUMMER SEMESTER, 2011**  
 COMPUTER SCIENCE  
 Mastering Cyberspace:  
 An Introduction to Practical Computing

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**TEST**  
 (Time allowed: 60 MINUTES)

<b>Surname:</b>	<b>Sample</b>
<b>First Name(s):</b>	<b>Answers</b>
<b>Student ID number:</b>	
<b>Login name (UPI):</b>	

**INSTRUCTIONS:**

- Attempt **ALL** questions - write your answers in the box provided
- Calculators are **NOT** permitted

Question	Mark
<b>Digital, Hardware, Software</b>	(/25)
<b>Internet</b>	(/25)
<b>XHTML and CSS</b>	(/25)
<b>Applications and Graphics</b>	(/15)
<b>Presentation</b>	(/10)

**TOTAL:**

(/100)
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## Digital Information, Hardware and Software (25 marks)

1. Define the Computer Science term **bit**.

**Binary Digit. Any of the digits 0 or 1 when used in the binary system. A single basic unit of information.**

(2 marks)

2. Storing information:

(a) How many different values can be represented in 1 bit?

**2**

(2 marks)

(b) What decimal number is equivalent to the binary number 110110?

**$32 + 16 + 4 + 2$   
 $= 54$**

(2 marks)

(c) What binary number is equivalent to the decimal number 22?

**10110**

(2 marks)

(d) How many bytes are there in 2 KiB?

**$2 \times 1024 = 2048$**

(2 marks)

3. What does CPU stand for?

**Central Processing Unit**

(2 marks)

4. What does the CPU do?

**It is the "brain" of the computer. It reads and follows the instructions that make up a program. It also does any calculations required and controls the rest of the computer system.**

(2 marks)

5. Name **two** types of connectors used to connect computers with external devices.

**Any two of: USB, Firewire, PS/2, VGA, DVI, Digital Port**

(2 marks)

6. What is an operating system and what is it responsible for?

**An operating system is the low-level software that allows you to use the system. It is the default interface when no application is running. It manages the system: CPU, memory, Hard Drive, etc. It does all the direct interaction with the hardware (using drivers).**

(3 marks)

7. Name **two** examples of operating systems.

**Any two operating systems, e.g. Windows 7, MacOS, Linux, Unix, MS-DOS**

(2 marks)

8. Name **two** file extensions (*for example, .exe*) for **each** of the following file formats:

- (a) **Two** file extensions for **graphics** files: **jpeg, gif, png**
- (b) **Two** file extensions for **video** files: **mpeg, avi, divx**

(4 marks)

## Internet (25 marks)

9. How is the Internet different from the traditional (telephone) network?

**The Internet is decentralized rather than centralized.**

**The Internet uses packet switching rather than circuit switching**

(2 marks)

10. Name **three** essential elements of the Internet's infrastructure.

**Any three elements, e.g. Protocols, domain names, client/server software, networking hardware.**

(3 marks)

11. What does DNS stand for and what does it do?

**DNS stands for Domain Name System.**

**It allows us to associate a human-readable name with an IP address.**

**It uses a sequence of names separated by dots.**

**Each domain name must be registered.**

**The DNS server translates domain names into IP addresses.**

(3 marks)

12. What is the difference between the TCP/IP protocol and the UDP protocol in terms of **transmission speed** and **reliability**?

**TCP/IP is slower but more reliable than UDP.**

**UDP is faster but less reliable than TCP/IP.**

(4 marks)

13. Given the email address `teacher@aucklanduni.ac.nz`, which letters describe the local part of the address, and which letters describe the domain?

Local part: **teacher**

Domain: **aucklanduni.ac.nz**

(2 marks)

14. When an email is sent, is the DNS server part of the sending process? If so, what is the DNS server's responsibility?

**Yes, the DNS server is part of the sending process.**

**The DNS server translates the domain name part of an email address into an IP address.**

(2 marks)

15. What does Netiquette mean and why is it important?

**Netiquette is etiquette (i.e. good manners) on the Internet.**

**It is how to behave politely on a network. This is important to avoid pitfalls when interacting on a network.**

**It involves understanding cultural norms, and understanding online communities.**

(2 marks)

16. Name **two** different types of blogs.

**Any two types, e.g. photoblog, videoblog, audioblog**

(2 marks)

17. What is a Web Server?

**A web server can be referred to as either the hardware (computer) or software that makes local files available through the Web.**

**It fulfils requests from a web browser.**

(2 marks)

18. Name **three** instances which keep a log when a web page is accessed?

**Client (Web browser) keeps log in history.**

**Operating System - requests are logged by the Operating System (e.g. Windows) and kept on the local machine.**

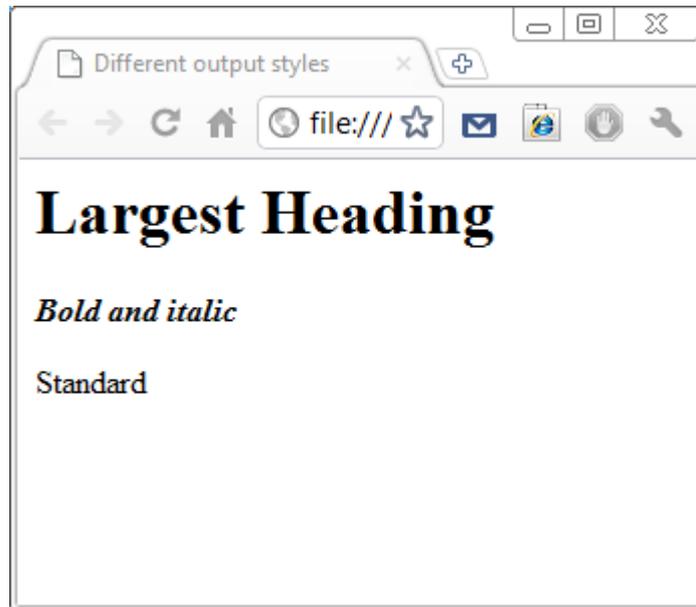
**ISP keeps a log - Requests from "IP Address" to "IP Address" for "Page Name".**

**Web Server - Gets requests from "IP Address" for "Page Name".**

(3 marks)

## XHTML and CSS (25 marks)

19. The following screenshot shows a web page created using XHTML 1.0 and CSS. Complete the source code below that would result in the web page shown below. You **must** use the style rules provided in the internal style sheet and must not add any new styles.



```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE html PUBLIC
"-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
  <head>
    <title>Different output styles</title>
    <style type="text/css">
      .heavy {font-weight:bold;}
      #important {font-style:italic;}
    </style>
  </head>
  <body>

    <h1>Largest Heading</h1>
    <p class = "heavy" id = "important">
      Bold and italic
    </p>
    <p>
      Standard
    </p>

  </body>
</html>
```

(6 marks)

20. In the following piece of XHTML 1.0 code, circle each error and write the correction in the line immediately underneath the error.

```
<body>

  <h1>Test</h2>
    </h1>
  <p>This is an <rb/ > example of XHTML code used in a web page</q>
    <br/ >

  <ol>
    <il> item 1
    <li>          </li>

  </ol>

</body>
```

(5 marks)

21. What are nested tags? Provide **one** example of nested tags.

**Nested tags are where one set of tags is nested inside another set of tags.**

**Example:**

**<b><i>bold and italic</i></b>**

(2 marks)

22. Define an XHTML CSS style rule that makes **all** level 2 headings **centred** and coloured **blue**.

**h2 { text-align:center; color:blue; }**

(3 marks)

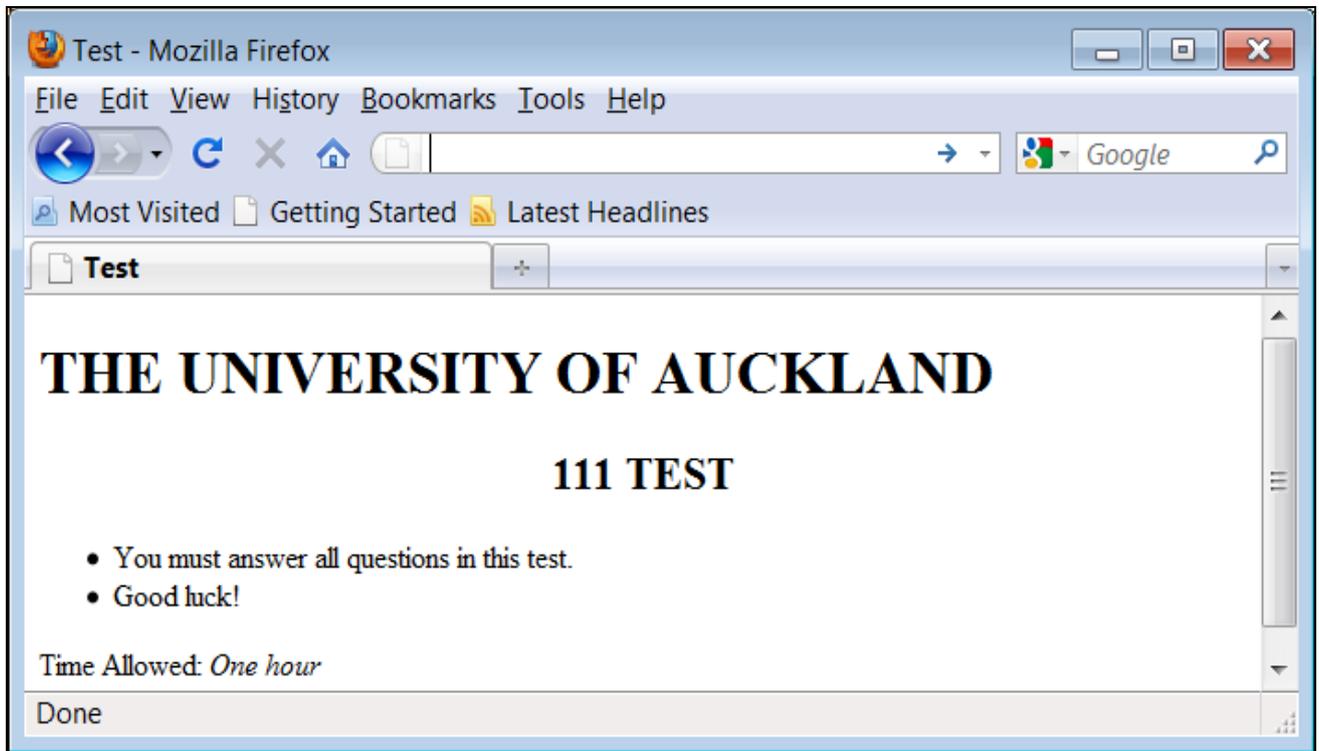
23. What does HTML stand for?

**Hypertext Markup Language**

(1 mark)

24. The following web page has been successfully validated as XHTML 1.0 Strict. On the following page, draw what the page will look like when it is displayed by a web browser.

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE html PUBLIC
"-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
<head>
  <title>Test</title>
  <style type="text/css">
    #quote { text-transform:uppercase; }
    .quote { font-style:italic; }
    h2 { text-align: center; }
  </style>
</head>
<body>
  <div id = "quote">
    <h1>The University of Auckland</h1>
    <h2>111 Test</h2>
  </div>
  <ul>
    <li>You must answer all questions in this test.</li>
    <li>Good luck!</li>
  </ul>
  <p>Time Allowed: <span class="quote">One hour</span> </p>
</body>
</html>
```



(8 marks)

## Applications and Graphics (15 marks)

25. What is PostScript, and what is it used for?

**PostScript is a language used by printers.**  
**It tells the printer how and where to display text.**

(2 marks)

26. How many **bytes** are required for a 4 colour image 20 pixels wide and 40 pixels high? Show **all** your working.

**Number of pixels in image =  $20 \times 40 = 800$  pixels**  
**4 colours needs 2 bits per pixel**  
**Therefore number of bits =  $2 \times 800 = 1600$  bits**  
**Number of bytes =  $1600 / 8 = \underline{200}$  bytes**

(3 marks)

27. Name **one** compression algorithm, explain its basic characteristics and state how appropriate it is for **photos** and/or for **graphics**.

(a) Name of one compression algorithm: **Jpeg.**

**Lossy method. 16 million colours, averages nearby colours**

(b) Appropriateness of this compression algorithm for photos: **Good for photos**

(c) Appropriateness of this compression algorithm for graphics: **Poor for graphics**

(4 marks)

28. List **two** advantages of vector graphics.

- 1) Very small memory requirements. Memory independent of the image size**
- 2) Scale to any size without loss of quality**

(2 marks)

29. What is the ASCII system used for?

**ASCII is a code used to represent characters in the English language as numbers.**

(2 marks)

30. What is the difference between a text editor and a word processor?

**A word processor has more formatting capabilities than a text editor.**

(2 marks)

## Presentation (PowerPoint and Web) (10 marks)

31. State **two** benefits of using PowerPoint.

**Easy to use, widely used, can create consistent presentations**

(2 marks)

32. If you were asked to prepare a **20 minute** PowerPoint presentation, as an approximate guide, what is the maximum number of slides your presentation should contain?

**40**

(2 marks)

33. What is a master slide in PowerPoint?

**A master slide is a design template for all the normal slides in a presentation. It helps to create a consistent presentation, and also saves time.**

(2 marks)

34. In regard to web site design, what is the 3-click rule?

**A user should be able to navigate from one page to another page within a particular website using no more than 3 mouse clicks.**

(2 marks)

35. Who wrote the article "PowerPoint is Evil"?

**Edward Tufte**

(2 marks)