

THE UNIVERSITY OF AUCKLAND

SECOND SEMESTER, 2007
COMPUTER SCIENCE
 Mastering Cyberspace: An Introduction to
 Practical Computing

TEST
(Time allowed: 60 MINUTES)

Surname:	Sample
Forenames:	Answers
Student ID number:	
Login name (UPI):	

INSTRUCTIONS:

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

Question	Mark
Digital, Hardware, Software	(/25)
Internet	(/30)
XHTML and CSS	(/25)
Presentation	(/10)
Applications	(/10)

TOTAL:

(/100)

Digital Information, Hardware and Software (25 marks)

1. Name three examples of input devices that can be connected to a computer.

Keyboard, mouse, game controller, joystick, touch pad, tablet, scanner, bar code reader

(3 marks)

2. What does “copyright” mean?

Copyright is a set of exclusive legal rights regarding the use of information. Typically, the information may not be legally used, modified or copied without the permission of the owner of the copyright. Copyright does not protect ideas. It is usually for a limited duration (lifetime of the author plus either 50 or 70 years).

(3 marks)

3. Give a simple rule with which you can protect yourself against spyware, malware and viruses.

Don't run any executable programs that you don't trust. Don't open email attachments unless you know who has sent them (and trust that they are reliable). Use anti-virus software to scan email attachments and files before you open them.

(3 marks)

4. What is the difference between analogue and digital information?

Analogue information is continuous. It has theoretically infinite resolution, which means that small variations are meaningful.

Digital information is discrete, and normally represents numbers, letters or other symbols. Digital information often has limited precision, the limit depends on the number of discrete values that are stored. Digital information in a computer is normally stored using binary.

(4 marks)

5. How many different numbers can be represented with 4 bits?

$$2^4 = 16$$

(4 marks)

6. Which decimal number does the binary number 101 correspond to?

$$\begin{aligned} 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 &= \\ 4 + 0 + 1 &= \\ 5 \end{aligned}$$

(4 marks)

7. What is the difference between a command-line interface and a graphical user interface?

A command line interface is a way of interacting with software that uses text-only input to a command line. This is generally more powerful than a graphical interface, but more difficult to use since the user must remember all the commands. An example of an OS that uses a CLI is MS-DOS.

A graphical user interface is a way of interacting with software that uses graphical elements such as windows, icons and menus. The user typically manipulates the elements using a device such as a mouse to control a pointer. This is generally easier to use than a command line interface. An example of an OS that uses a GUI is Windows XP.

(4 marks)

Internet (30 marks)

8. What kind of organization developed the Internet? At what time was that approximately?

US military, during the cold war (1969)

(4 marks)

9. What main function does the Internet Protocol (IP) fulfil?

Addressing of computers in the Internet
(and routing of data packets)

(3 marks)

10. What does an Internet Service Provider (ISP) do?

Provides Internet to clients by letting them connect to their
Internet servers (usually through phone lines using modems)

(3 marks)

11. What is a blog?

Blog is short for "Web log". It is a personal on-line diary.

(3 marks)

12. Name two things you can do with an instant messaging (IM) program.

1. See which of your friends are online
2. Send and receive messages instantly

(3 marks)

13. What is “spam” in the context of the Internet?

Unsolicited junk email (usually sent in bulk for advertising purposes)

(3 marks)

14. What is the wiki markup to display the following content? You can assume that the link is an internal link to a page entitled “students”.

This wiki is a *collaborative* effort by our students

This wiki is a ``collaborative`` effort by our [[students]]

(4 marks)

15. What is the main difference between the POP3 and the IMAP protocol?

POP3 deletes the email messages from the server after downloading them, whereas IMAP keeps them there

(3 marks)

16. Explain what a cache is and how does it help a user of the WWW?

A cache is a temporary storage area where frequently accessed data can be stored for rapid access. It helps a WWW user by speeding up the time taken to access (download) a web page.

(4 marks)

XHTML and CSS (25 marks)

17. For each of the following XHTML tags, state whether it is a block-level or inline tag.

```
<img>      Inline
<pre>      Block-level
<p>        Block-level
<br>       Inline
<table>    Block-level
<ol>       Block-level
<a>        Inline
<h3>       Block-level
```

(4 marks)

18. What is wrong with the following piece of XHTML code?

```
<body>
  <h1>Examples</h1>
  <p>This is an <i>example</i> of XHTML code used in a web page
  <h2> 2nd Example</h2>
  <p>This is a second example of XHTML code</p>
</body>
```

First <p> is not closed.

(3 marks)

19. If a hypertext link was made to a web page called **test.html** that was stored in the **/courses/compsci111/** directory of the **www.cs.auckland.ac.nz** web server, what would be the correct URL to insert in the anchor tag below?

```
<a href="http://www.cs.auckland.ac.nz/courses/compsci111/test.html">link to test</a>
```

(4 marks)

20. What do the acronyms XHTML and CSS stand for?

XHTML: Extensible Hypertext Markup Language

CSS: Cascading Style Sheets

(4 marks)

21. Suppose that in an external stylesheet we have the style:

```
p
{
text-align: center;
color: red;
font-weight: bold;
text-decoration: none;
}
```

while in the head of our XHTML document we have

```
<style type = "text/css">
  p
  {
    text-align: left;
    font-weight: normal;
  }
</style>
```

then using the following XHTML code in the body of the document will produce a paragraph with what type of text?

```
<p style="color: green; text-decoration:underline;">
What a strange paragraph!</p>
```

Text is left-aligned, green, underlined, normal weight.

(4 marks)

22. We want to make **all** level 2 headings in an XHTML document to appear in green, be centred, and be in bold. Write the CSS code that would appear in an external stylesheet to implement this style.

```
h2 {color: green; text-align: center; font-weight: bold;}
```

(4 marks)

23. **Extend** the style rule above to apply to all 3rd level headings as well.

```
h2, h3 {color: green; text-align: center; font-weight: bold;}
```

(2 marks)

Presentation (10 marks)

24. Some PowerPoint presentations use animation to ensure that only one point is shown at a time. State one advantage of this approach and one disadvantage.

(i) Advantage

The audience remains focused on a single point at a time. This keeps the audience together (concentrating on the same thing at the same time).

(2 marks)

(ii) Disadvantage

Because the audience can see only a single point, they can't anticipate what is coming up. This sometimes makes it more difficult for people to put the points into context and to see the bigger picture.

(2 marks)

25. Give one piece of advice about the use of colour that applies to both PowerPoint presentations and web site design.

Make sure that the colours used for the foreground text have high contrast against the background so that the text is easy to see. Use a limited range of colours - too many will make the page appear "busy" and confusing. Ensure that the background colour does not dominate the presentation and overpower the information. If you are using colours to signify meaning, be aware that colour-blind viewers may not be able to distinguish between certain colours (such as red/green and blue/yellow).

(3 marks)

26. What advice would you give about the design of navigation features on a web page within a given web site?

Navigation features should be obvious to a reader. They should have a consistent appearance and location for all pages within the site. The navigation structure should be simple and easy to use. Any page should be able to be reached from any other page within the site by following a maximum of three links between them.

(3 marks)

Applications (10 marks)

27. Given that the ASCII code for the letter A is 65, what are the ASCII codes for the word BEAD?

```
B     E     A     D
66    69    65    68
```

(2 marks)

28. What is PostScript?

```
A language used to describe how pages look. It is used by
laser printers.
```

(2 marks)

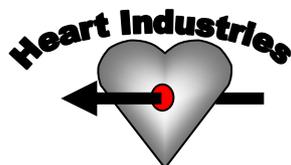
29. Given a black and white bitmap image that is 20 pixels wide and 40 pixels high, how many **bytes** of memory are required to store the image (ignore the memory required for header information)? Show your working.

```
20 x 40 = 800 pixels
black and white means 1 bit used for each pixel
so 800 bits required

since there are 8 bits for each byte
800 bits = 100 bytes
```

(3 marks)

30. If you were choosing a compression method to store the following company logo, would you use GIF, JPG or PNG?



```
GIF or PNG. If there are less than 256 colours used, then GIF
would be a reasonable choice. If more than 256 colours, then
PNG would be the best choice.
```