

THE UNIVERSITY OF AUCKLAND

SECOND SEMESTER, 2006
 COMPUTER SCIENCE
 Mastering Cyberspace: An Introduction to
 Practical Computing

TEST
 (Time allowed: 60 MINUTES)

Surname:	SAMPLE SOLUTIONS
Forenames:	SAMPLE SOLUTIONS
Student ID number:	SAMPLE SOLUTIONS
Login name (UPI):	SAMPLE SOLUTIONS

INSTRUCTIONS:

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

Question	Mark
Digital, Hardware, Software	(/25)
Internet	(/55)
Applications	(/20)

TOTAL:

(/100)

Digital Information, Hardware and Software (25 marks)

1. How many bytes are there in 32 bits?

One byte is 8 bits, so 4 bytes is 32 bits
Answer: 4 bytes

(2 marks)

2. For each of the following amounts of information, write down the amount of information using the most appropriate SI prefix (e.g. 7 KiB, 5TB). The most relevant prefixes (in alphabetical order) are: GB, GiB, KB, KiB, MB, MiB, PB, PiB, TB and TiB.

(i). 2048 bytes

1024 bytes = 1 KiB
Answer: 2 KiB

(2 marks)

(ii). 3,000,000 bytes

1,000,000 bytes = 1 MB
Answer: 3 MB

(2 marks)

(iii). 1,073,741,824 bytes

1,073,741,824 bytes = 1 GiB
Answer: 1 GiB

(2 marks)

3. Given that a piece of hardware stored exactly 2 GiB of information, what component would it most likely be?

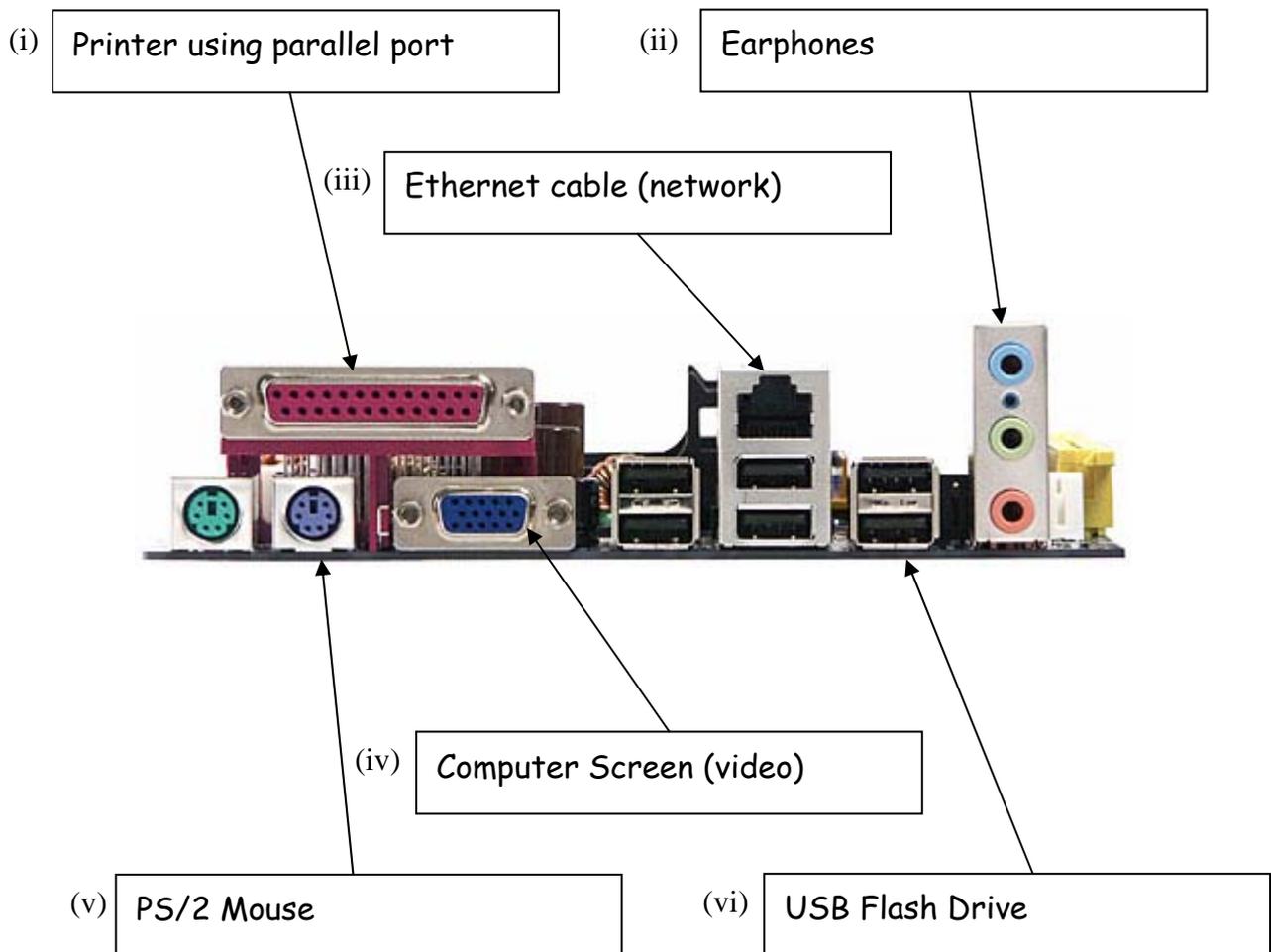
USB flash drive, or
RAM

(2 marks)

4. Imagine that you have the following list of peripheral components that need to be connected to a system box. State the component that should be plugged into each location on the diagram below.

The components are:

- Computer Screen
- Earphones
- Ethernet cable
- Printer using parallel port
- PS/2 Mouse
- USB Flash drive



(12 marks)

5. Explain what shareware is.

Shareware is software that is distributed via a license agreement that allows the user to try the software before they buy. If the user keeps using the software after a trial period, then they are expected to pay for the software.

(3 marks)

Internet (55 marks)

6. Put the following historical events into chronological order (i.e. arrange the events in order with the earlier events listed before later events).

- WWW created
- ARPAnet created
- Sputnik launched
- Browser wars occurred
- DNS created

1. Sputnik launched (triggered the creation of ARPA by the US)
2. ARPAnet created (the beginning of the Internet)
3. DNS created (used to convert domain names to IP addresses)
4. WWW created
5. Browser wars occurred (after the creation of the WWW)

(5 marks)

7. State the name of a protocol used on the Internet and what the protocol is used for.

(i) State the name of a protocol.

Many protocols could be given:

File transfer protocol (FTP), Hypertext transfer protocol (HTTP), Transmission control protocol (TCP), Internet protocol (IP), Internet message access protocol (IMAP), Post office protocol 3 (pop3), Simple mail transfer protocol (SMTP)

(2 marks)

(ii) State what the protocol is used for.

FTP - transferring files

HTTP - transferring hypertext documents (web pages)

TCP - dividing up messages into packets and reconstructing them again

IP - routing information for packets

IMAP, POP3, SMTP - Receiving and sending email

(2 marks)

8. Explain what a Domain Name Server does. Give an example to illustrate your answer.

A domain name server converts domain names into IP addresses.

For example, the domain name `www.cs.auckland.ac.nz` might be converted into the IP address `130.216.33.106`

Note: If the address is not listed in the DNS, then the DNS passes the request on to a DNS that will be able to resolve the name.

(4 marks)

9. The url "`http://www.freehomepages.org`" refers to a unique location on the Internet. In which country is the web server that hosts this site most likely to be located? Explain why.

(i) Country

USA

(2 marks)

(ii) Explanation

The domain name system was designed in the USA. By default, domain names are assumed to refer to hosts located in the USA. Hosts outside the USA are required to have a country code at the end of the domain name. Since .org is not a country code, the host machine must be located in the USA.

(2 marks)

10. Email, instant messaging, forums, blogs and wikis are all tools used by online communities, but each of these tools is suitable for a different purpose. For example, email is used to communicate privately with other individuals once you have their contact details. Explain the main purpose for each of the other tools (i.e. the primary use for this tool in an online community).

(i) Explain the main purpose of instant messaging

Individuals can communicate with each other instantly if they know each others contact details. This is a synchronous form of communication (i.e. communication happens both ways at the same time). For example, friends can chat to each other.

(2 marks)

(ii) Explain the main purpose of forums

Allows a community of people to discuss a topic publicly. Anyone (with appropriate access) can post a message and discussions occur when people reply to each other's posts.

(2 marks)

(iii) Explain the main purpose of blogs

To maintain an individual journal that anyone else can read. Allows a user to easily post messages in chronological order.

(2 marks)

(iv) Explain the main purpose of wikis

To collaboratively create documents. Anyone in the community can contribute and edit the work of others.

(2 marks)

11. Describe the logs that are kept when a user views a web page using a normal web browser that is installed on their home computer. In other words, what information is stored about that transaction and where is it stored?

- The browser stores a record of the page in the history (on the local computer)
- The operating system sometimes keeps a record of the requests to IP addresses.
- Firewalls or proxies operating between the browser and the web server will sometimes log the requests.
- The Internet service provider (ISP) stores a record of the pages requested on their host machine.
- The web server that you requested a page from will keep a log (on their web server) of the IP address that it sent the page to.

(5 marks)

12. The following wiki page was created for the COMPSCI 111/111G course using MediaWiki. Write the source code that would result in the wiki page shown below.

Example

This page illustrates the use of wiki markup

Bold and Italics

Using wiki markup you can make text appear:

- **bold**
- *italic*
- ***bold and italic***

Links

Links can be of two different kinds:

1. Internal, such as to [COMPSCI111/111G](#)
2. External, such as to <http://www.cs.auckland.ac.nz> 

The following table of wiki markup is included as a reference. You do not need to use all of the codes.

' '	emphasis	'''	strong
=	level 1 heading	==	level 2 heading
===	level 3 heading	----	horizontal rule
~~~	user name	[[name]]	link to a wiki page
url	link to a web page	*	unordered list
#	ordered list	; t : d	definition list
:	indent text		

**==Example==**

This page illustrates the use of wiki markup

**===Bold and Italics===**

Using wiki markup, you can make text appear:

*''bold''

*''italic''

*''''bold and italic''''

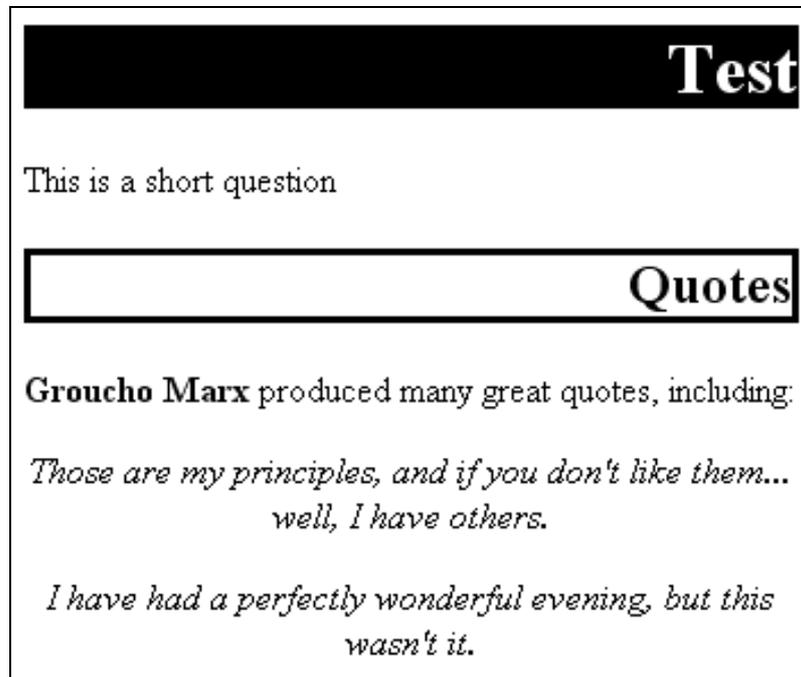
**===Links===**

Links can be of two different kinds

#Internal, such as to [[COMPSCI111/111G]]

#External, such as to <http://www.cs.auckland.ac.nz>

13. The following web page has been created using XHTML 1.0 strict and CSS.



Complete the XHTML page listed below by writing the internal style sheet. Some CSS properties have been included below as a reference. You do not need to use all the CSS properties listed.

#### CSS Reference Sheet

background-color	color
color	color
text-align	left / right / center / justify
text-transform	none / capitalize / uppercase / lowercase
border-color	color
border-style	none / dotted / solid / dashed / inset / outset
border-width	thin / medium / thick
font-style	normal / italic
font-variant	normal / small-caps
font-weight	normal / bold

```
<?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>
<head>
<title>Test Question</title>
<style type="text/css">
```

```
h1
{
    background-color: black;
    text-align: right;
    color: white;
}
h2
{
    text-align: right;
    border-style: solid;
    border-width: medium;
}
.quote
{
    text-align: center;
    font-style: italic;
}
#name
{
    font-weight: bold;
}

</style>
</head>

<body>
<h1>Test</h1>
<p>This is a short question</p>

<h2>Quotes</h2>
<p><span id="name">Groucho Marx</span> produced many great quotes,
including:</p>

<p class="quote">Those are my principles, and if you don't like
them... well, I have others.</p>

<p class="quote">I have had a perfectly wonderful evening, but this
wasn't it.</p>
</body>
</html>
```

(15 marks)

## Applications (20 marks)

14. The following PowerPoint slide contains a number of poor design decisions. State the three aspects of the slide design that you think are the worst.



(i)

Contrast between foreground and background is poor, making the text hard to read.

(2 marks)

(ii)

The structure of the headings and subheadings is poor, making it hard to understand what the main points are. The size and type of font used for the headings is inconsistent.

(2 marks)

(iii)

Too many font typefaces are used. The font size is too small. The amount of text listed after "Problem" is too great - it should be summarised as bullet points.

(2 marks)

15. Explain what the "three-click rule" of web page design is.

Any page on a given web site can be reached from any other page in the same web site by following three links (or fewer).

(3 marks)

16. Give two reasons that JPEG would not be a good format to use when compressing a company logo such as the following:



(i)

The size of the file will be larger than an alternate compression such as GIF (i.e. it is not an efficient compression algorithm for this kind of image)

(2 marks)

(ii)

We will see artefacts produced around the hard edges of the image. It will not look crisp and clean. JPEG is lossy and will distort the image. With such hard edges, we will notice the artefacts.

(2 marks)

17. User defined styles in MS-Word ensure consistency, and speed up the formatting of long documents. Explain.

(i) How do user-defined styles ensure consistency?

When we apply the style, we always get the same formatting changes. If we were making lots of individual changes, then we might forget to make a change in one area.

(2 marks)

(ii) How do user-defined styles speed up formatting?

We can apply multiple changes by applying a single style. This is much faster than making many different formatting changes one at a time.

(2 marks)

18. Given that the ASCII code for the letter 'M' is 77 and the ASCII code for the letter 'a' is 97, what are the codes required to represent the word "Ode"?

M=77, N=78, O=79

a=97, b=98, c=99, d=100, e=101

Answer: Ode is represented by the sequence 79, 100, 101

(3 marks)

ID Number .....

**OVERFLOW PAGE**

(If you have used this page, please indicate clearly under the relevant question that you have overflowed to this page)

ID Number .....

**OVERFLOW PAGE**

(If you have used this page, please indicate clearly under the relevant question that you have overflowed to this page)

ID Number .....

**OVERFLOW PAGE**

(If you have used this page, please indicate clearly under the relevant question that you have overflowed to this page)

ID Number .....

**ROUGH WORKING**

(You may detach this sheet from the test script and use it for working.  
This sheet will not be marked)

ID Number .....

**ROUGH WORKING**

(You may detach this sheet from the test script and use it for working.  
This sheet will not be marked)