

# THE UNIVERSITY OF AUCKLAND

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**SECOND SEMESTER, 2013**  
**Campus: City**

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## COMPUTER SCIENCE

### Mastering Cyberspace - An Introduction to Practical Computing

**(Time Allowed: 60 Minutes)**

- NOTE:
- Calculators are not permitted.
  - Compare the test version number on the Teleform sheet supplied with the version number above. If they do not match, ask the test supervisor for a new sheet.
  - Enter your name and student ID on the Teleform sheet. Your name should be entered left aligned. If your name is longer than the number of boxes provided, truncate it.
  - Answer Section A (Multiple choice questions) on the Teleform answer sheet provided. Answer Section B in the space provided in this booklet.
  - Use a dark pencil to shade in your answers in the multiple choice answer boxes on the Teleform sheet. Check that the question number on the sheet corresponds to the question number in this question book. If you spoil your sheet, ask the supervisor for a replacement.
  - There is space at the back for answers that overflow the allotted space.

<b>Surname</b>	<i>Sample</i>
<b>Forenames</b>	<i>Solutions</i>
<b>Student ID</b>	
<b>Login (UPI)</b>	

Question	Mark	Out Of
1 - 30    Multiple Choice		75
31        LaTeX		25
<b>TOTAL</b>		<b>100</b>

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CONTINUED

**SECTION A**  
**MULTIPLE CHOICE QUESTIONS**

For each question, choose the best answer according to the information presented in lectures. Select your preferred answer on the Teleform answer sheet by shading in the appropriate box.

**Question 1**

[2.5 marks] Which one of the following is the best definition of a byte?

- (a) A byte is a binary number consisting of an arbitrary number of 1's or 0's.
- (b) A byte is a binary number that can represent exactly 8 different values.
- (c) A byte is a binary number consisting of a sequence of 256 digits.
- (d) A byte is a binary number consisting of exactly 8 bits.**
- (e) A byte is a binary number consisting of exactly one binary digit.

**Question 2**

[2.5 marks] Which one of the following decimal numbers is equal to the binary number 111101?

- (a) 61**
- (b) 47
- (c) 132
- (d) 94
- (e) None of the above.

**Question 3**

[2.5 marks] Which one of the following binary numbers is equal to the decimal number 25?

- (a) 11011
- (b) 10111
- (c) 11001**
- (d) 10011
- (e) 11101

**Question 4**

[2.5 marks] Which one of the following values is the largest?

- (a) 1 TB
- (b) 1 GiB
- (c) 1 MB
- (d) 1 GB
- (e) 1 TiB**

**Question 5**

[2.5 marks] If a computer costing \$1000 in 2013 can complete a given task in 1 minute, how long would it take a computer costing \$1000 in 2022 to perform the same task? Choose the closest answer. Assume that computer technology improves according to Moore's Law.

- (a) Approximately 0.25 seconds.
- (b) Approximately 1 second.**
- (c) Approximately 8 seconds.
- (d) Approximately 0.025 seconds.
- (e) Approximately 16 seconds.

**Question 6**

[2.5 marks] What is the main function of a CPU?

- (a) To store information cheaply and persistently.
- (b) To connect all the major components of a computer together.
- (c) To define a standard method of communication between different computers.
- (d) To allow multiple hard drives to be connected together to improve reliability and performance.
- (e) To follow simple instructions and perform calculations.**

**Question 7**

[2.5 marks] What is one of the main differences between RAM and HDD memory?

- (a) For the same capacity of storage, RAM will be cheaper than HDD storage.
- (b) RAM is typically measured in TB while HDD storage is typically measured in GB.
- (c) RAM is portable and can be used to transfer information from one machine to another.
- (d) It is faster to access data stored on RAM than data stored on HDD.**
- (e) Information stored using HDD will be lost when the power is switched off (it is volatile).

**Question 8**

[2.5 marks] What is one of the main differences between copyright and patents?

- (a) Copyright normally lasts for 20 years while patents last the entire lifetime of the inventor.
- (b) Copyright is enforceable under law (i.e. it is legal), but patents are not enforceable under law.
- (c) Copyright protects ideas while patents protect specific creative works.
- (d) Copyright must be explicitly applied for but patents are granted automatically to a new product or process.
- (e) In some countries, copyright law applies to software but the software cannot be patented.**

**Question 9**

[2.5 marks] Which one of the following statements is TRUE?

- (a) **Changing a file extension will not affect the data in the file.**
- (b) Programs are normally executed one instruction at a time directly from the hard drive, but machines with dual core processors can load the instructions into RAM where they can be executed faster.
- (c) A CLI is a method of controlling a computer using only a mouse, whereas a GUI requires the use of a keyboard.
- (d) An 'open' standard means that anyone can use the standard to read data stored in a file, but it is not permissible to write data to a file without a 'close' standard.
- (e) An operating system is the technical term used for a computer that has been switched on, whereas computers that are not switched on are known as non-operational systems.

**Question 10**

[2.5 marks] Which one of the following has the events in the correct chronological order, from earliest to latest?

- (a) ARPANET created, DNS created, TCP/IP created, WWW created.
- (b) **Sputnik launched, ARPANET created, TCP/IP created, WWW created.**
- (c) ARPANET created, Sputnik launched, TCP/IP created, WWW created.
- (d) Sputnik launched, TCP/IP created, WWW created, DNS created.
- (e) TCP/IP created, ARPANET created, DNS created, WWW created.

**Question 11**

[2.5 marks] Which one of the following statements is FALSE?

- (a) Modems are used to convert network traffic into a form that can be transmitted over telephone lines.
- (b) Protocols are standard sets of rules for communicating between different systems.
- (c) The Domain Name System is used to translate from a human readable domain name to an Internet Protocol address.
- (d) **A single Internet connection can be shared with multiple users within a house using a WAN.**
- (e) New Zealand was connected to the Internet before the WWW was created.

**Question 12**

[2.5 marks] Which one of the following statements is FALSE?

- (a) There are a finite number of IP addresses available.
- (b) IP is used to route data from a source to a destination computer through the Internet.
- (c) TCP is used to break a message up into packets and reform the packets back into the original message.
- (d) An IP address consists of a set of four numbers separated by dots.
- (e) TCP uses compression to ensure the packets take less space when transferred.**

**Question 13**

[2.5 marks] Which one of the following protocols is NOT involved in sending or receiving email?

- (a) TCP/IP
- (b) SMTP
- (c) IMAP
- (d) UDP**
- (e) POP3

**Question 14**

[2.5 marks] Which one of the following statements about email messages is TRUE?

- (a) Recipients in the TO field can see the addresses that are in the BCC and CC fields.
- (b) Recipients in the CC field can see the addresses that are in the TO and BCC fields.
- (c) Only recipients in the CC field can see the other addresses in the BCC field.
- (d) Only recipients in the BCC field can see the other addresses in the CC field.
- (e) Recipients in the BCC field can see the addresses that are in the TO and CC fields.**

**Question 15**

[2.5 marks] Which one of the following statements is FALSE?

- (a) An email signature is not legally binding and could be easily faked.
- (b) An email without a subject will not be delivered to the destination address.**
- (c) Email might not be sent by the person listed in the "From" field.
- (d) Any type of file can be sent as an email attachment.
- (e) IMAP keeps mail on the server so it can be accessed from any location.

**Question 16**

[2.5 marks] Which of the following statements about wikis is FALSE?

- (a) Wikis are designed to allow people to collaborate and work together to create documents.
- (b) Ward Cunningham created the first wiki in 1995.
- (c) Wikipedia is the world's largest wiki.
- (d) Wikis can be vandalized by anyone with appropriate access.
- (e) Only the administrators of the wiki can see who has changed the content of a page.**

**Question 17**

[2.5 marks] Which of the following statements is FALSE?

- (a) A forum is used to conduct discussions in a structured way.
- (b) A blog is a web page that contains posts in alphabetical order.**
- (c) Wikis, blogs and forums are forms of social media that allow anyone to communicate to a public audience.
- (d) An owner of a blog normally has the right to delete people's comments.
- (e) A wiki can be used to collaboratively develop documents.

**Question 18**

[2.5 marks] What is hypertext?

- (a) Text that contains other media such as sounds and pictures.
- (b) Text in hyperspace.
- (c) Online text that anyone can edit.
- (d) Media with links to sounds and pictures.
- (e) Text with links to other documents.**

**Question 19**

[2.5 marks] What was the original purpose of the World Wide Web?

- (a) For researchers to share documents.**
- (b) To share music and images quickly and effectively.
- (c) To enable commerce to be done using the Internet.
- (d) To connect computers in case of a nuclear attack.
- (e) For the military to communicate more effectively.

**Question 20**

[2.5 marks] Which of the following statements is TRUE?

- (a) The Internet was created for the WWW.
- (b) The WWW is a service that runs on the Internet.**
- (c) The first web browser had a Graphical User Interface.
- (d) The WWW was developed by NASA.
- (e) The Internet is managed by Microsoft.

**Question 21**

[2.5 marks] What is a cache?

- (a) A copy of information that can be accessed faster than the original.**
- (b) Software that prevents unauthorized access to a network.
- (c) A log of IP addresses and pages accessed on the WWW.
- (d) A method of storage that improves reliability.
- (e) Software that intercepts web page requests and redirects them.

**Question 22**

[2.5 marks] Which system assigns human-readable names to computers on the Internet?

- (a) URL
- (b) Proxy
- (c) TCP/IP
- (d) Firewall
- (e) DNS**

**Question 23**

[2.5 marks] What does Google's page rank do?

- (a) The page rank records what web browsers do in the WWW.
- (b) The page rank tells us how many users have visited a web page each day.
- (c) The page rank measures the importance of a web page by looking at how many pages link to it.**
- (d) The page rank counts the number of web pages on a web site.
- (e) The page rank sorts web servers by their IP addresses.



**Question 24**

[2.5 marks] Which one of the following statements about the use of styles in Microsoft Word is FALSE?

- (a) Defining a style is a way of giving a name to a set of formatting choices.
- (b) Users can create their own styles, or use the ones that are built-in.
- (c) Using styles helps to maintain consistency of appearance.
- (d) Styles can be used to apply many formatting changes at once.
- (e) **Once a style has been defined, it cannot be modified.**

**Question 25**

[2.5 marks] Who invented the concept of a general purpose computing machine, on which all modern computers are based?

- (a) Steve Jobs.
- (b) **Alan Turing.**
- (c) Bill Gates.
- (d) Herman Hollerith.
- (e) Vanevar Bush.

**Question 26**

[2.5 marks] What is a “killer app”?

- (a) Anti-virus software that identifies and destroys viruses.
- (b) Software that reboots a computer.
- (c) An application used by hackers to damage files.
- (d) A type of computer game that involves violence.
- (e) **An application so popular that people buy a computer to use the application.**

**Question 27**

[2.5 marks] Where was the graphical user interface (GUI) invented?

- (a) At IBM.
- (b) **At Xerox Parc.**
- (c) At Microsoft.
- (d) At Apple.
- (e) At CERN.

**Question 28**

[2.5 marks] Who created the World Wide Web (WWW)?

- (a) John Warnock.
- (b) Bill Gates.
- (c) Doug Engelbart.
- (d) Steve Jobs.
- (e) Tim Berners-Lee.**

**Question 29**

[2.5 marks] Where is PostScript used?

- (a) By a laser printer.**
- (b) In a web browser to display text.
- (c) At the post office.
- (d) In email.
- (e) In a blog.

**Question 30**

[2.5 marks] Who invented the computer mouse?

- (a) Steve Jobs.
- (b) Doug Engelbart.**
- (c) Walt Disney.
- (d) Alan Turing.
- (e) Adobe.

**SECTION B**

Answer all questions in this section in the space provided. If you run out of space then please use the Overflow Sheet and indicate in the allotted space that you have used the Overflow Sheet.

**31. LaTeX (25 marks)**

(a) In the space below, draw what would be generated by the following LaTeX code.

```
\documentclass[a4paper]{article}
\begin{document}
\title{Time Wounds All Heels}
\date{15th of August, 2013}
\author{Another Student}
\maketitle
\begin{center}
What to do?
\end{center}
Should
I play \ or should I study?
\end{document}
```

Time Wounds All Heels

Another Student

15th of August, 2013

What to do?

Should I play  
or should I study?

(10 marks)

- (b) On the following page, complete the LaTeX code that will produce the following output:

**1 Useful formulas**

**1.1 Adding together all the integers between 1 and  $n$**

$$\sum_{i=1}^n i = \frac{n^2 + n}{2} \quad (1)$$

where  $n \geq 2$ .

**1.2 Volume of a sphere**

$$Volume = \frac{4}{3}\pi r^3 \quad (2)$$

The following LaTeX commands have been included as a reference. You will not need to use all of these commands. Note that the basic document structure has been completed for you.

<i>Normal commands</i>	<i>Environments</i>	<i>Math mode commands</i>
<code>\emph{}</code> <code>\section{}</code> <code>\subsection{}</code> <code>\large</code> <code>\textbf{}</code> <code>\title{}</code> <code>\author{}</code> <code>\date{}</code> <code>\maketitle</code> <code>\item</code>	<code>itemize</code> <code>enumerate</code> <code>verbatim</code> <code>flushright</code> <code>center</code> <code>quote</code> <code>displaymath</code> <code>equation</code> <code>quotation</code>	<code>\$</code> <code>\sum_{}^{\{}}</code> <code>\frac{\{\}}{\{\}}</code> <code>\sqrt{\}</code> <code>\geq</code> <code>\pi</code> <code>\ldots</code> <code>^</code> <code>-</code>

```
\documentclass[a4paper]{article}
\begin{document}
```

```
\section{Useful formulas}
```

```
\subsection{Adding together all the integers between 1 and $n$}
```

```
\begin{equation}
```

$$\sum_{i=1}^n i = \frac{n^2 + n}{2}$$

```
\end{equation}
```

where  $n \geq 2$ .

```
\subsection{Volume of a sphere}
```

```
\begin{equation}
```

$$\text{Volume} = \frac{4}{3}\pi r^3$$

```
\end{equation}
```

```
\end{document}
```

(15 marks)