THE UNIVERSITY OF AUCKLAND

SECOND SEMESTER, 2014
Campus: City

COMPUTER SCIENCE

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. There is space at the back for answers that overflow the allotted space.

Surname	**Sample**
Forenames	**Answers**
Student ID	
Login (UPI)	

Question		Mark	Out Of
1 - 30	Multiple Choice		75
31	LaTeX Output		10
32	LaTeX Code		15
	TOTAL		100

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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 decimal number equals the binary number 111101?

   (a) **61**
   (b) 49
   (c) 1001
   (d) 63
   (e) None of the above

Question 2

[2.5 marks] Moore's Law as taught in lectures states that the number of transistors on a single integrated circuit doubles approximately every 18 months while the price remains the same. According to Moore's law, how many transistors are there on a chip now compared to 15 years ago?

   (a) About 1,000,000 times as many
   (b) About 1,000,000,000 times as many
   (c) **About 1,000 times as many**
   (d) About 4,000 times as many
   (e) About 4,000,000 times as many

Question 3

[2.5 marks] Which of the following lists has all the items closest together?

   (a) 1 KB, 1 KiB, 1 GB
   (b) **1000 MB, 1 GB, 1 GiB, 1000 MiB**
   (c) 1 KB, 1000 KiB, 1 MB, 1 MiB
   (d) 1 MB, 1000 KB, 1GB, 1GiB
   (e) 1 GB, 1 GiB, 1000 MiB, 100 KB

Question 4

[2.5 marks] An A4 page of plain text with ASCII encoding needs approximately how much storage space?

   (a) 1 MB
   (b) 1 MiB
   (c) **3 – 4 KB**
   (d) 30 – 40 KB
   (e) None of the above

Question 5

[2.5 marks] Which statement about a RAID (redundant array of independent disks) is FALSE?

(a) It increases the speed of data transfer.

(b) It increases reliability by redundant storage.

(c) It allows data to be stored on multiple disks using striping.

(d) It can combine increased reliability with increased speed.

(e) **It is only used for backup of data.**

Question 6

[2.5 marks] In the context of computing, what is a driver?

(a) **A program that helps an OS to control a piece of hardware**

(b) A motor that makes a hard drive spin

(c) A utility to defragment a hard drive

(d) A program that helps an OS to compile source code

(e) A program that helps an OS to manage several users

Question 7

[2.5 marks] What does CLI stand for?

(a) Computer Language Interpreter

(b) Command Line Instruction

(c) Computer Language Interface

(d) **Command Line Interface**

(e) Command Line Interceptor

Question 8

[2.5 marks] Which of the following hardware components can typically be plugged into the motherboard?

(a) CPU

(b) Ethernet card

(c) Expansion card

(d) RAM

(e) **All of the above**

Question 9

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

    (a) Secondary storage is generally larger than RAM.
    (b) Secondary storage devices exist with capacity exceeding 1 TB.
    (c) RAM is faster than secondary storage.
    (d) RAM can only store data as long as the computer is switched on.
    (e) **For the same capacity, RAM is cheaper than secondary storage.**

Question 10

[2.5 marks] Which of the following lists is in the correct order, from earliest event to most recent event?

    (a) First email sent, Internet Explorer developed, Netscape founded, Firefox developed.
    (b) ARPANET created, DNS created, TCP/IP created, WWW created.
    (c) **ARPANET created, TCP/IP created, DNS created, WWW created.**
    (d) ARPANET created, first microprocessor built, Sputnik launched, DNS created.
    (e) WWW created, Netscape founded, Internet Explorer developed, first email sent.

Question 11

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

    (a) Circuit switching networks were invented after packet switching networks.
    (b) Packet switching networks are only used for asynchronous communication.
    (c) Circuit switching networks are mainly used for radio broadcasting.
    (d) **TCP is used on packet switching networks.**
    (e) Packet switching networks are less reliable than circuit switching networks.

Question 12

[2.5 marks] What is a protocol in the context of computing?

    (a) A software to control input devices.
    (b) **A standard enabling different computers to communicate**
    (c) A standard describing a format for documents
    (d) A log of errors that occurred during the compilation of a program
    (e) A signal used by modems to connect to a server via the telephone system

Question 13

[2.5 marks] Which of the following is NOT a protocol?

    (a) **ISP**
    (b) BitTorrent
    (c) SMTP
    (d) TCP
    (e) UDP

Question 14
[2.5 marks] Which of the following cannot be an IP address?

    (a) 173.194.40.150
    (b) 173.184.216.119
    (c) **173.194.256.150**
    (d) 2606:2800:220:6d:26bf:1447:1097:aa7
    (e) 93.184.216.119

Question 15
[2.5 marks] Which of the following abbreviations is NOT related to the Internet or the Web?

    (a) DNS
    (b) **GPU**
    (c) ISP
    (d) FTP
    (e) HTTP

Question 16
[2.5 marks] Which statement about email attachments is FALSE?

    (a) Attachments are files that are attached to messages.
    (b) Attachments are chopped into data packets by TCP.
    (c) Attachments can contain programs.
    (d) **If possible, it is better to send an attachment rather than a link to a file.**
    (e) Attachments can contain malware.

Question 17
[2.5 marks] Which of the following statements is TRUE?

    (a) You are legally permitted to copy software for educational purposes.
    (b) **The owners of proprietary software retain the legal rights to that software.**
    (c) You always have to pay for proprietary software.
    (d) Freeware is another name for open-source software.
    (e) Open-source software can be legally modified, but after that it cannot be shared with others.

Question 18

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

    (a) The WWW has a client-server structure.
    (b) The WWW was created by Tim Berners-Lee and his team at CERN.
    (c) **The WWW is a system of servers and routers that transfer data packets using TCP.**
    (d) The main protocol used to transfer web pages is HTTP.
    (e) The WWW was originally created to communicate hypertext pages.

Question 19

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

    (a) A proxy can be used to block content.
    (b) A proxy can be used to mask the client's IP address.
    (c) A proxy can be used by small companies to cache frequently requested web pages.
    (d) **A proxy can be used to increase the speed of email traffic.**
    (e) A proxy can be used to circumvent censorship.

Question 20

[2.5 marks] Which of the following generally keeps a log of web requests of a user?

    (a) User's ISP
    (b) User's web browser
    (c) Web server
    (d) User's OS
    (e) **All of the above**

Question 21

[2.5 marks] What is a link farm?

    (a) A web page consisting mainly of hyperlinks, and used to test the PageRank algorithm
    (b) **A web page consisting mainly of hyperlinks, and used to increase the PageRank result of other web sites**
    (c) A web page consisting mainly of hyperlinks, and used to create a directory of large web sites
    (d) A web page used by the government for the taxation of dairy farms
    (e) None of the above

Question 22

[2.5 marks] What is a peer-to-peer network mainly used for?

    (a) Tracking down web-supported terrorist activity

    (b) Preventing illegal access to copyrighted material

    (c) Running software of other members of the network remotely

    (d) Building an intranet among people with shared interests

    (e) **Downloading large files directly from computers of other members of the network**

Question 23

[2.5 marks] Which of the following can NOT be carried out with a cloud-base storage provider such as Dropbox?

    (a) Backup of important files in case the hard disk breaks.

    (b) Work collaboratively on a file such as joint essay or programming exercise.

    (c) **Increase the local hard disk space.**

    (d) Have friends proofread and correct your work.

    (e) Share vacation pictures.

Question 24

[2.5 marks] Which statement about Unicode is FALSE?

    (a) Unicode is a unification of all character sets.

    (b) Unicode can encode Chinese characters.

    (c) Unicode can store English alphanumeric characters using their ASCII code values.

    (d) Unicode is a standard for encoding the letters of nearly all writing systems.

    (e) **None of the above**

Question 25

[2.5 marks] Which of the following lists is in the correct chronological order, from earliest event to most recent event?

    (a) Computer mouse invented, GUI invented, first GUI word processor, first email sent.

    (b) ABC computer built, Turing machine built, Zuse's Z1 built, ENIAC built.

    (c) Turing machine built, ABC computer built, Zuse's Z1 built, ENIAC built.

    (d) ENIAC built, Colossus built, first Macintosh computer built, first GUI word processor.

    (e) **Colossus built, ENIAC built, first Macintosh computer built, first website created.**

Question 26

[2.5 marks] What is the minimum font size you should normally use on a PowerPoint slide?

   (a) **18 point size**
   (b) 22 point size
   (c) 14 point size
   (d) 26 point size
   (e) 10 point size

Question 27

[2.5 marks] As a general guide, what is the maximum number of slides that your PowerPoint presentation should have per minute of the presentation?

   (a) 2 - 4 slides per minute
   (b) 4 - 8 slides per minute
   (c) **1 - 2 slides per minute**
   (d) 10 - 20 slides per minute
   (e) Half a slide per minute

Question 28

[2.5 marks] Why should you not use red and green as the main colours on a website?

   (a) **Because some people are red/green colour blind.**
   (b) Because they are used in traffic lights.
   (c) Because the University colour is blue.
   (d) Because they are hard to understand.
   (e) Because they are not friendly colours.

Question 29

[2.5 marks] Which of these statements about using pictures and backgrounds in presentation and web design is TRUE according to the lecture slides?

   (a) Using larger images is good as they can display more details.
   (b) Use as many images as possible to maximize the amount of information contained on each page.
   (c) Complex backgrounds are good since they can contain a lot more information.
   (d) **Staying consistent in the use of a background across the entire web site is good.**
   (e) Using backgrounds that overshadow the content is okay.

Question 30

[2.5 marks] Which of the following points is NOT a step towards creating a successful business presentation according to the lecture slides?

    (a) Avoid complicated fonts.

    (b) **Write mostly in capital letters for better readability.**

    (c) Use contrasting colours for text and background.

    (d) Use animations and slide transitions sparingly.

    (e) Ensure that your presentation can run on any computer.

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 Output (10 marks)

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

```
\documentclass[a4paper]{article}
\begin{document}
\section{Some Famous Quotes}
\subsection{Winston Churchill}
\begin{itemize}
\item Success consists of going from failure to failure
without loss of enthusiasm.
\item My most brilliant achievement was my ability to be
able to persuade my wife to marry me.
\end{itemize}
\subsection{Albert Einstein}
I never think of the future\ldots \\ It comes soon enough.
\end{document}
```

1.1   Winston Churchill

- Success consists of going from failure to failure without loss of enthusiasm.

- My most brilliant achievement was my ability to be able to persuade my wife to marry me.

1.2   Albert Einstein

I never think of the future...
It comes soon enough.

(10 marks)

32. LaTeX Code (15 marks)

On the following page, complete the LaTeX code that will produce the following output:

> # Buoyancy
>
> Archy Medes and W. Iki
>
> August 2014
>
> # 1   Introduction
>
> In science, *buoyancy* is an upward force exerted by a fluid that opposes the weight of an immersed object.
>   The sum of the **buoyancy force** and the **object's weight** is
>
> $$F_{net} = 0 = mg - \rho_f V_{disp} g. \tag{1}$$

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.

Normal commands	*Environments*	*Math mode commands*
\emph{}	itemize	$
\section{}	enumerate	\sum_{}^{}
\subsection{}	verbatim	\frac{}{}
\large	flushright	\sqrt{}
\textbf{}	center	\geq
\title{}	quote	\rho
\author{}	displaymath	\ldots
\date{}	equation	
\maketitle	quotation	^
\item		_

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

\title{Buoyancy}
\author{Archy Medes and W. Iki}
\date{August 2014}
\maketitle

\section{Introduction}

In science, \emph{buoyancy} is an upward force exerted by a fluid that
opposes the weight of an immersed object.

The sum of the \textbf{buoyancy force} and the \textbf{object's weight} is

\begin{equation}
F_{net} = 0 = mg - \rho_f V_{disp} g.
\end{equation}

\end{document}
```

(15 marks)