

THE UNIVERSITY OF AUCKLAND

FIRST SEMESTER, 2010
Campus: CITY and EPSOM

Computer Science

Mastering Cyberspace: An Introduction to Practical Computing

(Time Allowed: ONE hour)

- NOTE:
- No calculators are 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.

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

Question	Mark	Out Of
1 - 20 Multiple Choice		30
21 The Internet and the World Wide Web		15
22 Digital Information, Hardware & Software		15
TOTAL		60

SECTION A

MULTIPLE CHOICE QUESTIONS

Each question in this section is worth **1.5** marks. For each question, choose the best answer according to the information presented in lectures. Select your preferred alternative on the Teleform answer sheet provided.

Question 1

[1.5 marks] What decimal number has the binary representation 1001?

- (a) 11
- (b) 3
- (c) 5
- (d) 1001
- (e) 9**

Question 2

[1.5 marks] Which of the following statements about analogue and digital information is **false**?

- (a) All sounds can be exactly represented in digital form.**
- (b) Images can be stored digitally with loss of details.
- (c) When we encode analogue information digitally, then we usually lose details.
- (d) Digital information is represented by discrete numbers.
- (e) Digital information can be represented by numbers without loss of precision.

Question 3

[1.5 marks] How many bits per pixel are necessary to encode 16 different colours?

- (a) 8
- (b) 5
- (c) 4**
- (d) 16
- (e) 256

Question 4

[1.5 marks] Which of the following statements about hardware is **false**?

- (a) If the clock speed of a CPU is increased, then it runs faster.
- (b) Scanners are direct entry input devices.
- (c) Hard drives generally have less memory than the RAM in a computer.**
- (d) Most desktop computers can be extended with extension cards.
- (e) Modern graphics cards have special functions for 3D graphics.

Question 5

[1.5 marks] According to Moore's law, by how many times does the number of transistors on a chip roughly increase in 15 years?

- (a) 1000**
- (b) 100
- (c) 15
- (d) 8
- (e) 18

Question 6

[1.5 marks] Which of the following statements about software is **false**?

- (a) The GPL is a software licence for free software.
- (b) Free software can be freely changed.
- (c) Free software is open-source.
- (d) Free software can be freely copied.
- (e) Freeware can always be freely modified.**

Question 7

[1.5 marks] Why is the Internet more robust than traditional telephone networks?

- (a) The Internet does not depend on individual nodes.**
- (b) The Internet has one big central exchange node.
- (c) The Internet is faster.
- (d) The Internet uses circuit switching.
- (e) The Internet has more nodes.

Question 8

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

- (a) Domain Name System**
- (b) Internet Addressing Service
- (c) ARPANET
- (d) TCP/IP
- (e) URL

Question 9

[1.5 marks] Which protocol is used to send emails?

- (a) XKCD
- (b) SMTP**
- (c) IMAP
- (d) HTML
- (e) POP3

Question 10

[1.5 marks] How does an IM (Instant Messaging) program find out which of your friends are online?

- (a) It gets told directly by your friends.
- (b) The central IM server tells it who is online.**
- (c) It searches the WWW.
- (d) It gets told by your Internet Service Provider (ISP).
- (e) It sends messages to all your friends and sees who answers.

Question 11

[1.5 marks] Which statement about wikis is **false**?

- (a) Wikis can be used as a simple online database.
- (b) Most wikis can be edited easily.
- (c) Wikis can generally only be edited by one user.**
- (d) Wikipedia is the world's biggest wiki.
- (e) Information in a wiki may be subjective.

Question 12

[1.5 marks] What does the word “blog” abbreviate?

- (a) Better log
- (b) Backlog
- (c) Nothing
- (d) Binary logarithm
- (e) Web log**

Question 13

[1.5 marks] Which statement about blogs is **false**?

- (a) Blogs may be personal.
- (b) Blog entries are typically sorted in reverse chronological order.
- (c) Blog entries are always sorted by topic.**
- (d) There are several million blogs on the WWW.
- (e) Some blogs contain mainly images and hardly any text.

Question 14

[1.5 marks] What is hypertext?

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

Question 15

[1.5 marks] Which statement about the WWW is **false**?

- (a) IP addresses of web servers are found using the DNS.
- (b) Web browsers can request web pages from web servers using HTTP.
- (c) Web browsers can be used to display web pages.
- (d) Web servers request web pages from web browsers.**
- (e) Web servers send web pages to web browsers.

Question 16

[1.5 marks] What does the page rank do?

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

Question 17

[1.5 marks] What is Unicode?

- (a) It is a standard for encoding the letters of most writing systems.**
- (b) It is an encoding standard specifically for Universities.
- (c) It is a standard assigning numbers to all the computers on the Internet.
- (d) It is a method for encoding text so that nobody can read it.
- (e) It is a universal method for transferring data over a network.

Question 18

[1.5 marks] How are black and white images typically stored?

- (a) Using 1 byte per pixel.
- (b) Using 2 bytes per pixel.
- (c) Using 1 Hz per pixel.
- (d) Using 1 bit per pixel.**
- (e) Using 2 bits per pixel.

Question 19

[1.5 marks] Which of the following statements about graphics is **true**?

- (a) Most printers have a higher spatial resolution than screens.**
- (b) Representing more colours requires less bits per pixel.
- (c) All screens have a higher spatial resolution than printers.
- (d) Printed colours are usually more realistic than colours on the screen.
- (e) Most screens can represent colours better than reality.

Question 20

[1.5 marks] Which types of images are better suited for enlargement and why?

- (a) Vector images because their geometric objects can be scaled precisely.**
- (b) Bitmap images because they usually take up more memory.
- (c) Bitmap images because they define the pixels in an image.
- (d) Bitmap images because they can be compressed easily.
- (e) Vector images because they can represent natural images exactly.

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.

Question 21 (15 marks)

(a) Describe **one** of the problems of the WWW.

Broken Links: Pages may be moved and referring page is not altered.

No inherent security / tracking / accounting system

No inherent information indexing: Much of the information on the WWW is not accessed by search engines. Information may be in other formats (postscript, pdf, archived).

Privacy

(3 marks)

(b) Describe one of the differences between TCP and IP.

TCP (Transmission Control Protocol) divides the message into packets, checks that all packets arrive, and combines packets to re-form the message

IP (Internet Protocol) defines addresses for computers on the Internet (e.g. 130.216.34.102), and defines routing information

(3 marks)

(c) Briefly describe one difference between a forum and a wiki.

A wiki is an online database. It is a collaborative website and can be edited by anyone with appropriate access.

A forum is like a message board - it is an online discussion site

(3 marks)

(d) In the following box, draw how this text would be displayed in the Stage I Wiki.

==What does this look like?==

CompSci111 is an interesting course.

Much more interesting than collecting matchboxes.

[[Main_Page|This should take you back to the main page.]]

What does this look like?

CompSci111 is an interesting course. Much more interesting than collecting matchboxes.

[This should take you back to the main page.](#)

(3 marks)

(e) When addressing an email, what do “Cc” and “Bcc” do?

Both Cc and Bcc are used to send a copy of an email to a recipient who is not the main recipient. However, none of the recipients are able to see that the Bcc recipient has been sent the email whereas all the recipients are able to see that the Cc recipient has been sent the email.

(3 marks)

Question 22 (15 marks)

Answer each of the following short answer questions in the space provided.

(a) How many **bytes** are needed to store the bitmap of an image of 256 colours, 100 pixels wide and 100 pixels high? Show your working.

$$\begin{aligned} \text{Number of pixels} &= 100 \times 100 \\ &= 10000 \text{ pixels} \end{aligned}$$

$$256 \text{ colours requires } 8 \text{ bits per pixel } (2^8 = 256)$$

$$\begin{aligned} \text{Therefore number of bits required} &= 10000 \times 8 \\ &= 80000 \text{ bits} \end{aligned}$$

$$\begin{aligned} \text{Number of bytes required} &= 80000 / 8 \\ &= 10000 \text{ bytes} \end{aligned}$$

(3 marks)

(b) What is the main difference between copyright and patents?

Copyright gives you the right to copy and distribute a particular work. The creator retains the rights to their creations but not the ideas behind them.

Having a patent means you have control over an idea or invention. It usually enables you to exclusively commercialise an idea for 20 years.

(3 marks)

(c) Briefly describe what an operating system does and name **two** examples of operating systems.

An operating system is low-level software that allows you to use the computer. It is the default interface when no application is running and it manages the computer's resources (e.g. CPU, memory, hard drive, etc.).

Examples of operating systems:

Windows XP

Unix

Linux

MS-DOS

Mac OS X

Windows 7

Vista

(3 marks)

(d) State **two** advantages of using user-defined styles in a word processing application.

Saves time

Consistency

(3 marks)

(e) What is the application "EndNote" used for?

EndNote is used to maintain a database of references.

It makes it easy to add citations to documents.

(3 marks)