THE UNIVERSITY OF AUCKLAND

SUMMER SEMESTER, 2018
Campus: City

COMPUTER SCIENCE

An Introduction to Practical Computing

TEST SOLUTIONS

(Time Allowed: ONE hour)

DIRECTIONS

1. Compare the test version number on the Teleform sheet supplied with the version number in the top left corner of this page. If they do not match, ask the test supervisor for a new sheet.

2. Enter your name and Student ID (in pencil) on the Teleform sheet and shade in the corresponding bubbles underneath. Your name and Student Id should both be entered left aligned. If your name is longer than the number of boxes provided, truncate it.

3. Answer all questions on the Teleform answer sheet provided.

4. 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.

5. Each question is worth 2.5 marks. There are 40 questions.

6. Calculators are NOT permitted.

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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 in pencil. There are 40 questions. Each question is worth 2.5 marks.

Question 1
[2.5 marks] Which of the following components can a computer do without?

   (a) Optical drive.
   (b) RAM.
   (c) Power supply.
   (d) CPU.
   (e) Motherboard.

Question 2
[2.5 marks] If a CPU takes 2 minutes to do a task today, how long would a CPU of the same price take 4½ years from now? Use Moore's Law as taught in lectures to calculate the answer.

   (a) 1 minute.
   (b) 20 seconds.
   (c) 15 seconds.
   (d) 45 seconds.
   (e) 15 minutes.

Question 3
[2.5 marks] Which of the following options list memory storage devices in ascending order of price per byte of memory (i.e. from least expensive to most expensive)?

   (a) CPU cache, HDD, SSD, DD4 RAM.
   (b) HDD, SSD, DDR4 RAM, CPU cache.
   (c) HDD, DDR4 RAM, CPU cache, SSD.
   (d) SSD, HDD, CPU cache, DD4 RAM.
   (e) HDD, SSD, CPU cache, DD4 RAM.

Question 4

[2.5 marks] Have a look at the following computer specifications:

Cooler Master Tower case
ASUS Gaming ATX motherboard
Intel i7 hexa-core 3.7 Ghz
16 GB DDR4 RAM
Samsung 500 GB SSD
Seagate 2TB HDD
ASUS Geforce GTX1080 Ti 11GB
750W PSU
Microsoft Windows Home 10 64-bit

Which of the following statements are TRUE?

I.   The computer has a 6 core CPU.
II. The computer has an integrated graphics card.
III. The computer has a total of 2.5 TB of secondary storage.
IV. The computer comes with an operating system installed.
V.   The computer system unit has a small form factor.

   (a) II, III and V.
   (b) III, IV and V.
   (c) I, II, II, IV and V.
   (d) I, III and IV.
   (e) I, II, III and IV.

Question 5

[2.5 marks] What is the decimal equivalent of 1100110?

   (a) 102
   (b) 204
   (c) 153
   (d) 51
   (e) None of the above.

Question 6

[2.5 marks] What is the binary equivalent of 75?

   (a) 1101001
   (b) 101001
   (c) 100101
   (d) 1001011
   (e) None of the above.

Question 7
[2.5 marks] Which of the following options has memory capacities listed in descending order (largest to smallest)?

    (a) 2 TB, 1 TiB, 1 GiB, 2 GB, 6 KB, 6 KiB.
    (b) 4 GiB, 4 GB, 6 MB, 6 MiB, 4 KiB, 4 KB.
    (c) 2 TiB, 2 TB, 1500 MB, 1 GB, 5 KiB, 5 KB.
    (d) 1.5 GB, 3000 KB, 2.5 MB, 7 KB, 7 KiB.
    (e) 3 KB, 3 KiB, 1 GB, 1500 MB, 9 TB, 9 TiB.

Question 8
[2.5 marks] Which of the following statements are TRUE?

I.   Real world information is continuous.
II. Digital information is discrete.
III. Analogue information is discrete.
IV. Storing real world information digitally results in loss of information.

    (a) I, III and IV.
    (b) I and II.
    (c) I and III.
    (d) I, II and IV.
    (e) None of the above.

Question 9
[2.5 marks] Indira is a software developer. She has developed an image processing application that she plans to release soon. She wants her application to have two modes: a mode for free users with limited functionality, and a mode for paid users where all functionality is available. What sort of software is Indira planning to release?

    (a) Nagware.
    (b) Crippleware.
    (c) Freemium software.
    (d) Freeware.
    (e) Open source software.

Question 10
[2.5 marks] Which of the following would be classified as system software?

I.   Windows 10.
II. macOS.
III. Microsoft Edge.
IV. Microsoft Word.
V. Disk Cleanup.

    (a) I and II.
    (b) I, III and V.
    (c) I, II, III, IV, and V.
    (d) I, II, and V.
    (e) I, III, IV, and V.

Question 11
[2.5 marks] Which of the following statements about CLIs are TRUE?

I.   CLIs are inefficient for experienced users.
II. CLIs let users combine commands.
III. CLIs are graphically-based.
IV. CLIs can be difficult to use for novice users.
V.   Keyboard shortcuts help to make CLIs more efficient.

    (a) I, II, III and V.
    (b) II, III and V.
    (c) I and III.
    (d) I, III and V.
    (e) II and IV.

Question 12
[2.5 marks] Which of the following statements is FALSE?

    (a) File formats can use an open standard or a proprietary standard.
    (b) A file format determines how a program encodes its files.
    (c) The CPU executes software directly from secondary memory.
    (d) The file MidtermTest.pdf.docx is most likely to be a Microsoft Word document.
    (e) A file extension is used by the operating system to determine file format.

Question 13

[2.5 marks] Katie is developing a video-chat application. She wants the application to transmit user video and audio data in real-time. What protocol should her application use?

    (a) HTTP.
    (b) UDP.
    (c) IMAP.
    (d) TCP.
    (e) POP3.

Question 14

[2.5 marks] Which of the following is NOT a valid IPv4 address?

    (a) 232.196.10.10
    (b) 130.217.157.23
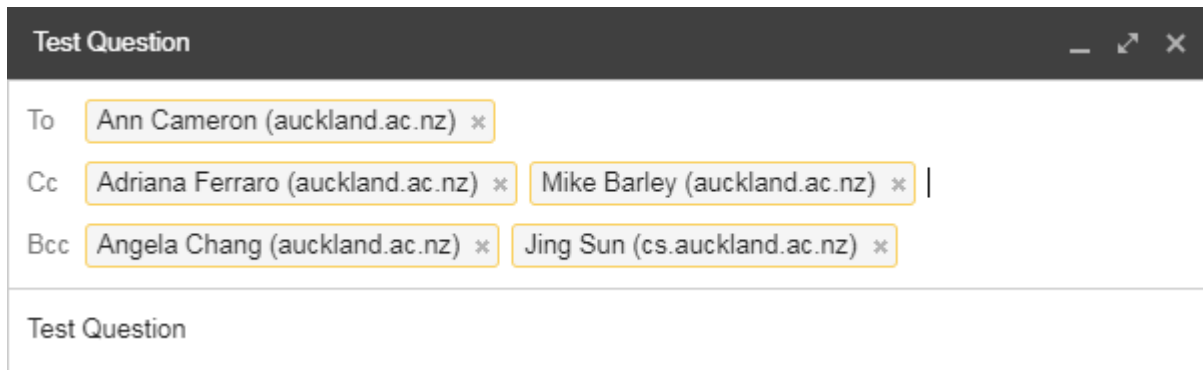   (c) 48.32.12.8
    (d) 0.0.1.1
    (e) 192.168.256.1

Question 15

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

    (a) The Internet uses the TCP/IP protocol.
    (b) Modem is short for modulator/demodulator.
    (c) A LAN operates within a 1 km radius.
    (d) Europe is the continent with the most Internet users.
    (e) A WAN operates within distances of over 1 km.

Question 16

[2.5 marks] Consider the following diagram:

Test Question	— ↗ ✕
To	Ann Cameron (auckland.ac.nz) ✕
Cc	Adriana Ferraro (auckland.ac.nz) ✕ Mike Barley (auckland.ac.nz) ✕ │
Bcc	Angela Chang (auckland.ac.nz) ✕ Jing Sun (cs.auckland.ac.nz) ✕
Test Question	

Which of the following statements are TRUE?

I.   All recipients receive the same email.
II.   Ann will know that Angela has received the email.
III.   Mike will know that Jing has received the email.
IV.   Jing will know that Adriana has received the email.
V.   Angela will know that Jing has received the email.

   (a) I and IV.
   (b) II, IV and V.
   (c) II, III, and IV.
   (d) II and V.
   (e) II, III, IV and V.

Question 17

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

   (a) Sending spam is illegal in New Zealand.
   (b) Spam refers to unsolicited bulk email.
   (c) The name "spam" comes from a Saturday Night Live (SNL) comedy sketch.
   (d) Most email services have spam filters that divert spam emails to a junk folder.
   (e) Spam emails may contain malware.

Question 18

[2.5 marks] Hideo receives an email from his bank informing him that his credit card is going to be cancelled. The email advises him to click on the provided link and sign into his online banking account to prevent this from happening, which he does. A week later, Hideo notices that $1000 has been withdrawn from his bank account. What has Hideo fallen victim to?

(a) A phishing scam.
(b) A Trojan horse.
(c) Online blackmail.
(d) A virus.
(e) None of the above.

Question 19

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

(a) Blogs can be used to harass or insult people.
(b) Blogs can be used as an alternative source of information during political unrest.
(c) Blogs can generate revenue through advertising.
(d) Privacy and information accuracy are not issues for blogs.
(e) Blog is short for web log.

Question 20

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

(a) Wikipedia articles on pop culture are more accurate than those on academic topics.
(b) ClueBot NG is an automated system used to address Wikipedia vandalism.
(c) Wikipedia provides an enormous amount of information to its readers.
(d) Recent changes patrol (RC Patrol) is a manual system used to address Wikipedia vandalism.
(e) Wikipedia is free from advertising as it is funded by grants and public donations.

Question 21

[2.5 marks] What Wiki markup would need to be used to create the following external link?

Visit Rotten Tomatoes for the latest movie reviews!

- (a) `Visit [[Rotten Tomatoes|https://www.rottentomatoes.com/]] for the latest movie reviews!`
- (b) `Visit [Rotten Tomatoes https://www.rottentomatoes.com/] for the latest movie reviews!`
- (c) `Visit [https://www.rottentomatoes.com/ Rotten Tomatoes] for the latest movie reviews!`
- (d) `Visit [[https://www.rottentomatoes.com/|Rotten Tomatoes]] for the latest movie reviews!`
- (e) `Visit [Rotten Tomatoes] for the latest movie reviews!`

Question 22

[2.5 marks] Which of the following do NOT hold a log of your browsing history?

- (a) Web servers.
- (b) Operating systems.
- (c) ISPs.
- (d) Web browsers.
- (e) They all hold a log of your browsing history.

Question 23

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

- (a) A proxy can be used between a client and server to intercept and process requests.
- (b) A proxy can use a cache to enable faster processing of requests.
- (c) Caches store recently requested resources so that they can be accessed quickly.
- (d) A firewall prevents unauthorized access to a private network.
- (e) None of the above.

Question 24

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

I.   Search engine results are unbiased.
II.   Search algorithms are usually not proprietary.
III. Advertising plays a significant role in how search engines operate.
IV. Search engines may offer personalized search results.
V.   The right to be forgotten (R2BF) allows individuals anywhere in the world to request the removal of out of date search results.

   (a) I, II, III and IV.
   (b) I, II and III.
   (c) I, II, III, IV and V.
   (d) I, II and V.
   (e) I, II, III and V.

Question 25

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

   (a) A web browser is software used to access and view content on the World Wide Web.
   (b) Hypermedia refers to the integration of many forms of media.
   (c) A web server is a computer system that makes files available on the World Wide Web.
   (d) Tim Berners-Lee created the World Wide Web.
   (e) Mosaic was the first widely used web browser.

Question 26

[2.5 marks] What is the ASCII code for the word "Unicode"?

   (a) 117 110 105 99 111 100 101
   (b) 85 78 73 67 79 68 69
   (c) 85 110 105 99 111 100 101
   (d) 117 78 73 67 79 68 69
   (e) None of the above.

Question 27

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

   (a) Speed and consistency are two advantages of user defined styles.
   (b) A footnote is content found in the bottom margin of every page.
   (c) Computer code is usually not WYSIWYG.
   (d) An endnote is text that appears at the end of the document.
   (e) Notepad++ is an example of a text editor.

Question 28

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

(a) With a "Next page" section break, the new section begins on the page after the original section.

(b) With a "Continuous" section break, the new section begins on the same page as the original section.

(c) A section break marks the point between two sections.

(d) Individual sections in a single document always share the same formatting.

(e) None of the above.

Question 29

[2.5 marks] Which set of LaTeX statements below would produce the following mathematical formula?

$$\frac{1}{\sqrt{2\pi\sigma^2}}e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

(a) `\begin{displaymath}`
   `\frac{1}{\sqrt{2\pi\sigma^2}}e^{-\frac{(x-`
   `\mu)^2}{2\sigma^2}}`
   `\end{displaymath}`

(b) `\begin{equation}`
   `\frac{1}{\sqrt{2\pi\sigma^2}}e^-\frac{(x-`
   `\mu)^2}{2\sigma^2}`
   `\end{equation}`

(c) `\begin{displaymath}`
   `\frac{1}{\sqrt{2\pi\sigma^2}}e^(-\frac{(x-`
   `\mu)^2}{2\sigma^2})`
   `\end{displaymath}`

(d) `\begin{equation}`
   `\frac{1}{\sqrt{2\pi\sigma^2}}e^{-\frac{(x-`
   `\mu)^2}{2\sigma^2}}`
   `\end{equation}`

(e) None of the above.

Question 30

[2.5 marks] Which set of LaTeX statements below would produce the following mathematical formula?

$$Z = \sqrt{n}\left(\frac{1}{n}\sum_{i=1}^{n}X_i\right) \qquad (1)$$

(a) `\begin{equation}`
   `Z = \sqrt{n}(\frac{1}{n}\sum^n_{i=1}X_i)`
   `\end{equation}`

(b) `\begin{displaymath}`
   `Z = \sqrt{n}(\frac{1}{n}\sum^n_{i=1}X_i)`
   `\end{displaymath}`

(c) `\begin{equation}`
   `Z = \sqrt{n}\left(\frac{1}{n}\sum^n_{i=1}X_i\right)`
   `\end{equation}`

(d) `\begin{equation}`
   `Z = \sqrt{n}(\frac{1}{n}\sum_i=1^n X_i)`
   `\end{equation}`

(e) `\begin{displaymath}`
   `Z = \sqrt{n}\left(\frac{1}{n}\sum^n_{i=1}X_i\right)`
   `\end{displaymath}`

Question 31

[2.5 marks] Marco spends a lot of time online, viewing movies and video clips, and listening to music. Over the last few months he has been consuming a lot of depressing media and his family and friends have noticed him expressing negative affect. When his friends communicate with him online, they too find themselves expressing negative affect. What term can be used to describe this scenario?

(a) Cognitively penetrating.
(b) Emotional contagion.
(c) Instant gratification.
(d) Narcissistic personality disorder.
(e) Social skills deficits.

Question 32

[2.5 marks] Haare is a software developer and has spent the last few months working on releasing a software product. This has involved long hours of programming trying to meet the impending release date. Recently he has developed aches and pains in both hands, as well as occasional episodes of numbness and tingling in his fingers. Which of the following actions could Haare take to address these symptoms?

I.   Take regular breaks.
II. Work longer hours to finish the project sooner.
III. Maintain correct posture during work.
IV. Attempt to manage stress levels.
V. Start using ergonomic office equipment.

    (a) I, III, IV and V.
    (b) I, II, IV and V.
    (c) I, III and V.
    (d) I, II, III, IV and V.
    (e) I, II, and V.

Question 33

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

    (a) Listening to music at a lower volume through headphones can help prevent hearing loss.
    (b) Only people who wear corrective lenses may suffer from CVS.
    (c) The hearing loss suffered by prolonged exposure to loud music is permanent.
    (d) Reducing the amount of time listening to media through headphones can help prevent hearing loss.
    (e) Improving the lighting within a computer work station can help prevent CVS from developing.

Question 34

[2.5 marks] Which of the following is an important part of face-to-face communication?

    (a) Eye contact.
    (b) Facial expression.
    (c) Tone of voice.
    (d) Spatial distance.
    (e) All of the above.

Question 35

[2.5 marks] Which of the following contribute to making online anonymity more difficult to achieve and maintain?

I. Advertisers have tools that effectively track users' preferences and browsing habits.
II. Websites demand more personal information and keep track of their users' activities.
III. Laws require ISPs to keep a record of the IP addresses assigned to users.
IV. Governments are expanding their online surveillance powers.

    (a) III and IV.
    (b) II, III and IV.
    (c) I, II, III and IV.
    (d) I and II.
    (e) I, II and III.

Question 36

[2.5 marks] A website has been designed so that when users pay it a visit, the website uploads and installs a small program on the users' computers without them knowing about it. This program runs silently in the background, monitoring the users' activities and sends this information back to the owner of the website. What sort of malware is this program?

    (a) Trojan horse.
    (b) Virus.
    (c) Worm.
    (d) Spyware.
    (e) Logic bomb.

Question 37

[2.5 marks] A movie is rated RP 16. Which of the following people are not able to legally view this movie in a cinema?

    (a) A 15 year old child.
    (b) A 22 year old adult.
    (c) A 16 year old child.
    (d) A 15 year old child with their father.
    (e) A 17 year old child.

Question 38

[2.5 marks] Mei is a graphic designer. She is creating a logo for a company which will consist of graphics. To ensure her logo is eye catching, she wants to use a 24 bit colour representation. Which of the following compression algorithms would be the best option for her to use?

    (a) MP3.
    (b) PNG.
    (c) GIF.
    (d) JPEG.
    (e) None of the above.

Question 39

[2.5 marks] How many bytes are required to store an image that has 256 different colours, and is 10 pixels wide by 24 pixels high?

    (a) 960 bytes.
    (b) 7680 bytes.
    (c) 240 bytes.
    (d) 1920 bytes.
    (e) None of the above.

Question 40

[2.5 marks] Carlos has taken a square picture with his 16 megapixel digital camera. He wants to print this picture using his printer capable of printing 2000 dots per inch. How many inches across would the picture be when printed?

    (a) 2 inches.
    (b) 1 inch.
    (c) 0.5 inches.
    (d) 1.5 inches.
    (e) None of the above.

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