

# THE UNIVERSITY OF AUCKLAND

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**SUMMER SEMESTER, 2019**

**Campus: City**

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**COMPUTER SCIENCE**

**An Introduction to Practical Computing**

**TEST**

**(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] Look at the following computer specifications:

Intel Core i9-7900X 8 Core 3.3 GHz  
13 MB L3 cache  
32 GB DDR4 2800MHz  
NVIDIA GeForce GT 8 GB GDDR5  
1 TB SATA3 HDD  
500 GB SATA3 SSD

Which of the following statements is FALSE?

- (a) This computer has approximately 40 GB of volatile memory.
- (b) The fastest form of memory in the computer specifications above is the L3 cache.
- (c) This computer has a motherboard.
- (d) This computer has a discrete graphics card.
- (e) This computer has 1 TB of non-volatile memory.

**Question 2**

[2.5 marks] A computer in 2020 takes 2 hours and 40 minutes to complete a task. Using Moore's Law as taught in lectures, how long will it take an identically priced computer to complete the same task in 2026?

- (a) 15 minutes.
- (b) 1 hour.
- (c) 10 minutes.
- (d) 5 minutes.
- (e) 1 hour and 20 minutes.

**Question 3**

[2.5 marks] Which of the following statements about RAID are TRUE?

**X:** RAID can pool secondary storage devices to form a larger, more reliable data storage mechanism.

**Y:** RAID controller decides how data is stored on and read from the storage devices.

**Z:** RAID1 configuration provides data redundancy.

- (a) None of X, Y, and Z.
- (b) X and Z only.
- (c) Y and Z only.
- (d) All of X, Y, and Z.
- (e) X and Y only.

**Question 4**

[2.5 marks] What is the decimal representation of  $1011_2 + 1001_2$ ?

- (a) 10
- (b) 20
- (c) 15
- (d) 13
- (e) 11

**Question 5**

[2.5 marks] What is the binary equivalent of 53?

- (a) 110001
- (b) 101010
- (c) 110101
- (d) 100001
- (e) 110011

**Question 6**

[2.5 marks] If we want to represent 60 different values, how many bits would we need?

- (a) 4
- (b) 3
- (c) 2
- (d) 5
- (e) 6

**Question 7**

[2.5 marks] Which of the following sequences is arranged in ascending order of memory capacity?

- (a) 4 KB, 4 KiB, 1 GB, 1500 MB, 3 TB, 3 TiB.
- (b) 3 KB, 3 KiB, 6 MiB, 6 MB, 2 GB, 2 GiB.
- (c) 5 KiB, 5 KB, 2.4 MB, 2000 KB, 1.5 GB.
- (d) 8 KiB, 8 KB, 3 GB, 3 GiB, 1 TB, 1 TiB.
- (e) 7 TiB, 7 TB, 1500 MB, 1 GB, 2 KiB, 2 KB.

**Question 8**

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

- (a) The way a computer program uses binary numbers to save information is called the file format.
- (b) File formats can use an open standard or a proprietary standard.
- (c) The file extension is used by operating systems to determine file format.
- (d) A proprietary standard is a standard owned by a company or individual.
- (e) Software is directly executed from the secondary memory by the CPU.

**Question 9**

[2.5 marks] What is the proprietary software called that works with limited functionality until the user purchases it?

- (a) Crippleware.
- (b) Nagware.
- (c) Freemium.
- (d) Open source.
- (e) Abandonware.

**Question 10**

[2.5 marks] Which of the following is NOT an example of system software?

- (a) Mac OS.
- (b) Visual Studio.
- (c) Disk Defragmenter.
- (d) Ubuntu Linux.
- (e) Windows 10.

**Question 11**

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

- (a) 132.256.1.1
- (b) 0.0.0.0
- (c) 197.1.1.1
- (d) 123.255.255.0
- (e) 69.89.31.226

**Question 12**

[2.5 marks] Which of the following statements about the Internet are TRUE?

**X:** The sequence of communication links and packet switches traversed by a packet from the sender to the receiver is called the route or path.

**Y:** End systems access the Internet through Internet Service Providers.

**Z:** Internet applications run on packet switches.

- (a) None of X, Y, and Z.
- (b) Y and Z only.
- (c) All of X, Y, and Z.
- (d) X and Y only.
- (e) Y only.

**Question 13**

[2.5 marks] Which of the following statements about packet-switched networks are TRUE?

**X:** The route between the sender and the receiver is pre-determined and used to send all the packets.

**Y:** Packets may arrive out of order

**Z:** Messages are broken down into packets.

- (a) All of X, Y, and Z.
- (b) Y and Z only.
- (c) X only.
- (d) X and Y only.
- (e) Z only.

**Question 14**

[2.5 marks] What is the name of the directory service on the Internet for translating human-readable hostnames into machine-readable IP addresses?

- (a) SMTP.
- (b) TCP.
- (c) UDP.
- (d) DNS.
- (e) IP.

**Question 15**

[2.5 marks] Which of the following statements about Internet protocols are TRUE?

**X:** IP defines routing information.

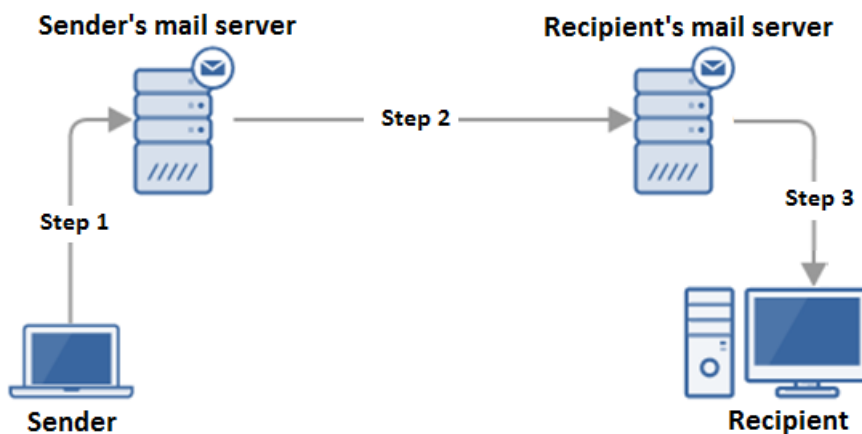
**Y:** Open protocol definitions are defined in a document called RFC.

**Z:** TCP ensures that packets reach their destination reliably.

- (a) X and Y only.
- (b) Y and Z only.
- (c) Y only.
- (d) X only.
- (e) All of X, Y, and Z.

**Question 16**

[2.5 marks] What protocol is used for Step 2 in the following diagram?



- (a) POP3.
- (b) FTP.
- (c) IMAP.
- (d) SMTP.
- (e) HTTP.

**Question 17**

[2.5 marks] Given the following email fields, which recipient is able to see all the other recipients?

To: John@gmail.com

Cc: David@gmail.com, Emily@gmail.com

Bcc: Tom@gmail.com

- (a) David, Emily, and Tom.
- (b) John.
- (c) None of the recipients can see all the others.
- (d) David and Emily.
- (e) Tom.

**Question 18**

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

- (a) Recent changes patrol is a group of individual users who check the recent changes of various articles for vandalism.
- (b) Registered users can watch a page using watchlists to detect vandalism.
- (c) Wikipedia was founded by Ward Cunningham.
- (d) Articles on academic topics are more accurate than articles on pop culture and politics.
- (e) ClueBot NG is a program to automatically detect vandalism.



**Question 19**

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

**1. Apples****1. Granny smith****2. Royal Gala**

- (a) #Apples  
#Granny smith  
#Royal Gala
- (b) \*Apples  
\*\*Granny smith  
\*\*Royal Gala
- (c) @Apples  
@!Granny smith  
@!Royal Gala
- (d) #\*Apples  
#\*Granny smith  
#Royal Gala
- (e) #Apples  
##Granny smith  
##Royal Gala

**Question 20**

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

- (a) WordPress.
- (b) Pinterest.
- (c) Tumblr.
- (d) Twitter.
- (e) Instagram.

**Question 21**

[2.5 marks] Which of the following statements about online searches are TRUE?

**X:** Google search results return the same information to anyone who enters the same keywords.

**Y:** A filter bubble risks isolating people within their own bubble of information.

**Z:** Search history can be used to identify individuals, even when searching anonymously.

- (a) X and Y only.
- (b) All of X, Y, and Z.
- (c) X and Z only.
- (d) Y and Z only.
- (e) Y only.

**Question 22**

[2.5 marks] Which of the following statements about a proxy are TRUE?

**X:** The proxy sits in between the client and the server, and intercepts and processes requests.

**Y:** The proxy prevents unauthorized access to a private network.

**Z:** The proxy can use a cache to store recent requests, enabling it to serve requests faster.

- (a) Y only.
- (b) Y and Z only.
- (c) X and Z only.
- (d) Z only.
- (e) All of X, Y, and Z.

**Question 23**

[2.5 marks] Which of the following is TRUE?

- (a) Malware includes worms but not viruses.
- (b) Malware includes worms and viruses.
- (c) Worms include viruses and malware.
- (d) Viruses include malware and worms.
- (e) None of the above.

**Question 24**

[2.5 marks] Which of the following is FALSE with regard to Peer-to-Peer (P2P) networks?

- (a) P2P networks use BitTorrent.
- (b) P2P networks enable file sharing between computers.
- (c) P2P networks are a type of client-server system.
- (d) P2P networks share resources amongst each other without the use of a centralized administrative system.
- (e) In P2P networks, each computer stores files and acts as a server.

**Question 25**

[2.5 marks] Online fingerprinting refers to a tracking technique capable of identifying individual users based on:

- (a) Web browser and device settings.
- (b) Device settings.
- (c) A small file called a cookie.
- (d) Web browser settings.
- (e) Logs of URLs visited.

**Question 26**

[2.5 marks] What is the ASCII code for the word *Computer*?

- (a) 99 79 77 80 85 84 69 82.
- (b) 67 111 109 112 117 116 101 114.
- (c) 67 112 110 113 117 116 102 115.
- (d) 100 80 78 81 86 85 70 83.
- (e) None of the above.

**Question 27**

[2.5 marks] Choose the best definition for the ¶ symbol:

- (a) New paragraph.
- (b) Section break.
- (c) Page break (continuous).
- (d) Page break.
- (e) Section break (continuous).

**Question 28**

[2.5 marks] Which of the following need to be referenced?

- (a) Interpreting results from a graph in an article.
- (b) Critiquing methods from an article.
- (c) Explaining how your own theory differs from previous theories.
- (d) Describing a concept from an article in your own words.
- (e) All of the above.

**Question 29**

[2.5 marks] Bobby takes a photo of a hilarious dog and posts it to Instagram. In the next few minutes, Bobby checks his social media account 10 times because he loves to make others laugh. This story indicates that Bobby may suffer from ...

- (a) Nothing – this is normal behaviour.
- (b) Need for instant gratification.
- (c) Delayed social style.
- (d) Lack of awareness of online presence.
- (e) Reduced visual emotional cues.

**Question 30**

[2.5 marks] In a 2014 study of 105 U.S. children, a test group did not use digital devices for 5 days while a control group used them as usual. How did the test group differ from the control group?

- (a) More narcissistic during face-to-face interactions compared to controls.
- (b) Better resilience against emotion contagion.
- (c) Nothing – there were no differences between the two groups.
- (d) More symptoms of depression compared to controls.
- (e) Better recognition of nonverbal emotional cues compared to controls.

**Question 31**

[2.5 marks] How did teens measured in the mid 2000s compare to those in the late 1980s / early 1990s with regards to hearing loss?

- (a) Those that listened to music had more hearing loss compared to those who watched videos.
- (b) They were aware of problems so engaged in more preventative behaviours regarding music.
- (c) There was a reduction in permanent hearing loss but an increase in temporary hearing loss.
- (d) There was a 33% increase in hearing loss.
- (e) There was a 33% decrease in hearing loss.

**Question 32**

[2.5 marks] Choose the best definition for Ergonomics:

- (a) The design of work and workplaces to optimize wellbeing.
- (b) An umbrella term for conditions characterized by pain, numbness, tingling, etc.
- (c) The study of the economic cost of Occupational Overuse Syndrome (OOS).
- (d) An approach to rehabilitation for repetitive strain injury (RSI).
- (e) The hedonic optimization of workflows.

**Question 33**

[2.5 marks] Consider the following screenshot of an Excel spreadsheet:

	A
1	10
2	20
3	30
4	40
5	

Which of the following options represents the correct formula to calculate the sum of the values from Cell A1 to Cell A4?

- (a) =TOTAL(A1-A4)
- (b) =SUM(A1,A4)
- (c) =TOTAL(A1:A4)
- (d) =SUM(A1-A4)
- (e) =SUM(A1:A4)

**Question 34**

[2.5 marks] Consider the following screenshot of an Excel spreadsheet:

	A
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
10	11
11	

Which of the following options represents the correct formula to calculate the arithmetic mean (average) of the values in Column A of Rows 1 to 10?

- (a) =MEAN(A1:A10)
- (b) =TOTAL(A1:A10)/10
- (c) =MEDIAN(A1:A10)
- (d) =AVERAGE(A1:A10)
- (e) =A10/2

**Question 35**

[2.5 marks] Consider the following screenshot of an Excel spreadsheet:

	A	B	C
1	<b>Price per case</b>	<b>Number of cases</b>	<b>Value</b>
2	\$20.00	2	\$40.00
3	\$30.00	3	\$90.00
4	\$15.00	4	\$60.00
5	<b>Total:</b>	9	\$190.00
6			
7	<b>Weighed Average Price per Case:</b>	\$21.11	

Which of the following formulas correctly calculates the weighted average price per case?

- (a) =AVERAGE(A2\*B2)
- (b) =SUM(A2:A4:B2\*B4)/ SUM(B2:B4)
- (c) =(A2\*B2 + A3\*B3 + A4\*B4)/SUM(B2:B4)
- (d) =(A2\*B2 + A3\*B3 + A4\*B4)/3
- (e) =SUM(A2\*B2:A4\*B4)/9

**Question 36**

[2.5 marks] Consider the following screenshot of an Excel spreadsheet:

	A	B	C	D	E
1	<b>Name</b>	<b>Score</b>	<b>Result</b>	<b>Passing score:</b>	<b>70</b>
2	Anderson	92	Pass		
3	Colby	95	Pass		
4	Dove	70	Pass		
5	Frantz	65	Fail		

Which of the following formulas, when inserted into Cell C2 above, will display the word **“Fail”** if the score is less than the passing score and will display **“Pass”** otherwise?

- (a) =IF(B2<=\$E\$1,"Fail","Pass")
- (b) =Function(if(B2>E1, "Fail", "Pass"))
- (c) =IF(B2<=\$E\$1, Fail, Pass)
- (d) =IF(B2>=\$E\$1, 'Pass', 'Fail')
- (e) =IF(B2<70,'Fail','Pass')

**Question 37**

[2.5 marks] Jade has taken a square picture with her new 16 megapixel camera. She prints this picture out on her printer that has a print resolution of 2000 dots per inch. What would the dimensions of the picture be when it was printed?

- (a) 1 inch by 1 inch.
- (b) 0.5 inches by 0.5 inches.
- (c) 2 inches by 2 inches.
- (d) 0.25 inches by 0.25 inches.
- (e) None of the above.

**Question 38**

[2.5 marks] How much memory (in bytes) would be required to store an image that has 64 different colours and is 200 pixels high by 400 pixels wide?

- (a) 480 KB.
- (b) 60 KB.
- (c) 10 KB.
- (d) 80 KB.
- (e) None of the above.

**Question 39**

[2.5 marks] Which of the following statements about image compression algorithms are TRUE?

- I. The JPEG algorithm allows for different degrees of compression.
- II. The GIF algorithm is a lossy compression algorithm.
- III. The PNG algorithm uses 24 bits for colour representation.
- IV. The PNG and GIF algorithms provide good compression with photos.
- V. Using the JPEG algorithm to compress graphics results in compression artifacts.

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

**Question 40**

[2.5 marks] Which of the following statements about vector graphics are TRUE?

- I. Vector graphics are a type of bitmap graphics for shapes and fonts.
- II. Vector graphics have small memory requirements.
- III. Scaling vector graphics results in loss of image quality.
- IV. For vector graphics, memory requirements are dependent on image size.
- V. With vector graphics, an image consists of independent objects defined by mathematical formulae.

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