

# THE UNIVERSITY OF AUCKLAND

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**FIRST 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 expected to have exactly 1 (one) correct answer. If you believe that a question has either NO answer or MULTIPLE correct answers, select the ONE you believe is most likely to be the intended answer.
6. Each question is worth 2.5 marks. There are 40 questions.
7. 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] In the year X, a computer takes 24 minutes to do a computation. In 2020, a similarly priced computer takes around 6 minutes to perform the exact computation. According to Moore's Law (as taught in the lectures), what is the year X?

- (a) 2014.
- (b) 2015.
- (c) 2016.
- (d) 2017.
- (e) 2018.

**Question 2**

[2.5 marks] Look at the following desktop computer specifications:

Intel Core i7 Quad-Core 3.2 GHz  
15 MB L3 cache  
32 GB DDR4 RAM  
NVIDIA GeForce GT 8 GB GDDR5  
1 TB HDD  
500 GB SSD  
Ubuntu Linux 18.04

Which of the following statements regarding the above-mentioned desktop computer is FALSE?

- (a) This desktop has 1 TB of non-volatile memory.
- (b) This desktop comes pre-installed with an operating system.
- (c) This desktop has a discrete graphics card.
- (d) This desktop has approximately 40 GB of volatile memory.
- (e) This desktop has a motherboard.

**Question 3**

[2.5 marks] Which RAID configuration consists of an exact copy of a set of data on two or more disks?

- (a) RAID 10.
- (b) RAID 0.
- (c) RAID 100.
- (d) RAID 9.
- (e) RAID 1.

**Question 4**

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

- (a) A heat sink and a fan are used to draw heat away from a computer's CPU.
- (b) RAM is the fastest form of memory in a computer.
- (c) A CPU is typically made of billions of transistors.
- (d) Computer systems are designed using the principle of modularity.
- (e) VRAM is volatile memory.

**Question 5**

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

- (a) An SSD has a higher read/write speed than an HDD.
- (b) An SSD stores data on flash memory.
- (c) An SSD can wear out faster than an HDD.
- (d) An SSD operates silently.
- (e) An SSD consumes more power than an HDD.

**Question 6**

[2.5 marks] Which of the following is NOT an output device?

- (a) Projector.
- (b) Touchscreen.
- (c) Biometric scanner.
- (d) Virtual Reality Headset.
- (e) Printer.

**Question 7**

[2.5 marks] What is the decimal representation of 110001?

- (a) 27
- (b) 31
- (c) 17
- (d) 49
- (e) 19

**Question 8**

[2.5 marks] What is the binary equivalent of 45?

- (a) 100101
- (b) 101111
- (c) 111101
- (d) 101100
- (e) 101101

**Question 9**

[2.5 marks] If we want to represent 100 different values, how many bits would we need?

- (a) 4
- (b) 6
- (c) 2
- (d) 7
- (e) 5

**Question 10**

[2.5 marks] A dial has 10 different states. Given a machine that uses 4 dials, how many different numbers can we represent?

- (a) 10
- (b) 1000
- (c) 10000
- (d) 100
- (e) 4

**Question 11**

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

- (a) 3 KiB, 3 KB, 2.4 MB, 2000 KB, 1.5 GB.
- (b) 6 TiB, 6 TB, 1400 MB, 2 GB, 5 KiB, 2 KB.
- (c) 4 KB, 4 KiB, 7 MiB, 7 MB, 4 GB, 4 GiB.
- (d) 7 KiB, 7 KB, 2 GB, 2 GiB, 1 TB, 1 TiB.
- (e) 2 KB, 2 KiB, 1 GB, 1400 MB, 2 TB, 2 TiB.

**Question 12**

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

- (a) A file extension determines how binary numbers are used to encode information in a file.
- (b) File formats can use an open standard or a proprietary standard.
- (c) Software is loaded from the secondary memory into primary memory, where it is executed by the CPU.
- (d) Proprietary standard is a standard owned by a company or individual.
- (e) The way a computer program uses binary numbers to save information is called the file format.

**Question 13**

[2.5 marks] What is the proprietary shareware software called that keeps reminding the user to purchase the full version of the software?

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

**Question 14**

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

- (a) GIMP.
- (b) Apache OpenOffice.
- (c) Eclipse.
- (d) iOS.
- (e) Visual Studio.

**Question 15**

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

- (a) 139.257.0.1
- (b) 0.0.0.0
- (c) 89.59.31.226
- (d) 197.1.36.1
- (e) 121.255.255.0

**Question 16**

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

- (a) Routers connect networks.
- (b) Hosts access the Internet through ISPs.
- (c) Switches create a network.
- (d) The Internet is the global system of interconnected networks that use TCP/IP to link systems worldwide.
- (e) Hosts are located at the core of the Internet.

**Question 17**

[2.5 marks] Which of the following statements about packet-switched networks is FALSE?

- (a) Packets can traverse several communication links and routers during their journey.
- (b) Messages are always broken down into packets.
- (c) Packets always arrive in the order they were sent.
- (d) Every packet contains the address of the destination.
- (e) Packets are automatically rerouted if any node on the path fails.

**Question 18**

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

- (a) Open protocol definitions are defined in a document called RFC.
- (b) The Internet Protocol (IP) defines routing information.
- (c) A protocol establishes how two computers communicate over a network.
- (d) UDP offers flow control and error detection.
- (e) TCP ensures that the packets reach their destination reliably.

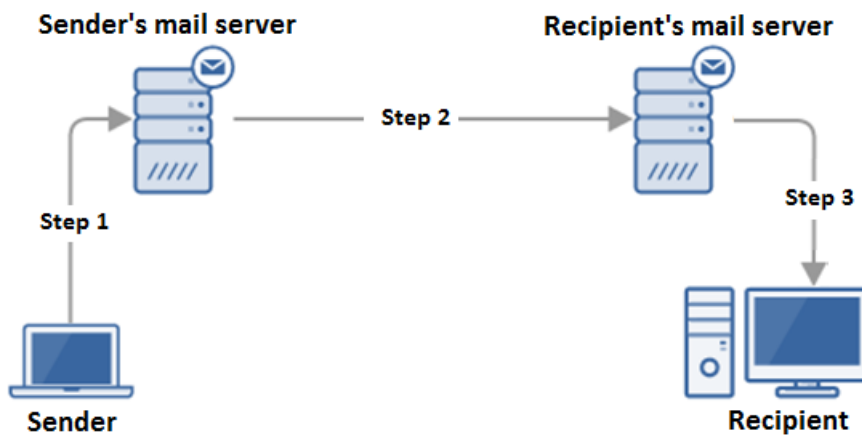
**Question 19**

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

- (a) An IPv4 address consists of 4 groups of octets.
- (b) IPv6, offering a vastly increased address space, was created as a solution to the exhaustion of IPv4 addresses.
- (c) IPv6 is 126 bits long.
- (d) IPv4 is 32 bits long.
- (e) Every host on the Internet needs an IP address.

**Question 20**

[2.5 marks] What protocol is used for Step 1 in the following diagram?



- (a) SMTP.
- (b) IMAP.
- (c) RTSP.
- (d) ARP.
- (e) POP3.

**Question 21**

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

- (a) Emails may be read by the mail server administrator.
- (b) Generally, employers reserve the right to read your emails on the company's email system.
- (c) Emails can be encrypted using PNG.
- (d) Emails may be read in transit.
- (e) Spam emails may contain attachments or links that can infect a computer with malware.

**Question 22**

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

- (a) Wikipedia is funded by grants and public donations.
- (b) All Wikipedia articles are checked by a quality control team before they are published.
- (c) ClueBot NG is a program that automatically detects vandalism.
- (d) Registered users can watch a page using watchlists to detect vandalism.
- (e) Recent changes patrol is a communal patrol whereby individual users check the recent changes made to various articles to identify vandalism.



**Question 23**

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

- Apples
  - *Granny smith*
    - *Royal Gala*
- Oranges
- Pears

- (a) \*Apples  
 \*\*'Granny smith'  
 \*\*\*'Royal Gala'  
 \*''Oranges''  
 \*Pears
- (b) \*Apples  
 \*\*Granny smith  
 \*\*\*Royal Gala  
 \*Oranges  
 \*Pears
- (c) \*Apples\*  
 \*\*'Granny smith''\*\*  
 \*\*\*'Royal Gala''\*\*\*  
 \*''Oranges'''\*  
 \*Pears\*
- (d) \*Apples  
 \*\*'Granny smith''  
 \*\*'Royal Gala''  
 \*''Oranges'''  
 \*Pears
- (e) #Apples  
 #'Granny smith''  
 #\*\*\*'Royal Gala''  
 #''Oranges'''  
 #Pears

**Question 24**

[2.5 marks] Which of the following options would be the correct Wiki markup to create a link to The New York Times homepage (<https://www.nytimes.com/>) and also assign a label (Newspaper) to that link?

- (a) `[www.nytimes.com Newspaper]`
- (b) `[[https://www.nytimes.com/ Newspaper]]`
- (c) `[https://www.nytimes.com/ Newspaper]`
- (d) `{[www.nytimes.com Newspaper]}`
- (e) `[https://www.nytimes.com/ | Newspaper]`

**Question 25**

[2.5 marks] Which of the following is a reason to use a cache?

- (a) Store recently accessed resources so they can be accessed quickly.
- (b) Filter content.
- (c) Intercept and process requests.
- (d) Provide the user with more accurate search results.
- (e) Prevent unauthorized access to a private network.

**Question 26**

[2.5 marks] Which of the following statements about the URL `https://www.cs.university.edu/~user/bio.html` is FALSE?

- (a) `bio.html` is the resource being requested.
- (b) `https` stands for hypertext transfer protocol standard.
- (c) `/~user/` is the path on the web server that contains the requested resource.
- (d) `https` is the protocol.
- (e) `www.cs.university.edu` is the domain name of the web server.

**Question 27**

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

- (a) A filter bubble risks isolating people within their own bubble of information.
- (b) Personalized search results can help people to find relevant information.
- (c) Search engine algorithms are a trade secret.
- (d) Search engine companies collect a vast amount of information about their users.
- (e) Search results return the same information to anyone who enters the same keywords.

**Question 28**

[2.5 marks] The WannaCry malware is an example of which of the following?

- (a) Spyware.
- (b) Ransomware.
- (c) Logic bomb.
- (d) Trojan.
- (e) Virus.

**Question 29**

[2.5 marks] Which of the following statements about P2P networks is FALSE?

- (a) Peers in a P2P network are intermittently connected to the Internet.
- (b) BitTorrent is an example of a P2P protocol for file sharing.
- (c) P2P networks utilize the client-server architecture.
- (d) Each participant in a P2P network can be both a server and a client.
- (e) P2P networks are highly scalable.

**Question 30**

[2.5 marks] Which of the following is the ASCII code for SURF?

- (a) 86 87 67 78 99
- (b) 115 117 114 102
- (c) 118 110 119 100
- (d) 84 87 88 89
- (e) 83 85 82 70

**Question 31**

[2.5 marks] Which of the following statements about Word processors/Text editors is FALSE?

- (a) All text editors allow the user to change the font.
- (b) Files created by word processors store text and formatting information.
- (c) Notepad++ is a text editor.
- (d) Computer code is usually not WYSIWYG.
- (e) Most word processors allow you to proof-read your document using spelling and grammar checkers.

**Question 32**

[2.5 marks] Which of the following statements about word processing features is FALSE?

- (a) A footnote provides more information about something in the main text of the page.
- (b) A header is a content found in the top margin of every page.
- (c) Endnotes appear at the end of the document.
- (d) A footnote is a content found in the bottom margin of every page.
- (e) A style is a group of formatting decisions that have been given a name.

**Question 33**

[2.5 marks] Which of the following is an example of a psychological health issue related to technology?

- (a) Computer Vision Syndrome.
- (b) Distraction.
- (c) Hearing Loss.
- (d) Repetitive Strain Injury.
- (e) Occupational Overuse Syndrome.

**Question 34**

[2.5 marks] Which of the following statements about health and technology is FALSE?

- (a) There is limited evidence documenting a relationship between depression and technology.
- (b) Visual cues are absent during electronic communication.
- (c) Transmission of depression through technological interaction is referred to as emotional contagion.
- (d) Research has shown that younger people show a stronger urge to report their activities on social media.
- (e) Digital devices are cognitively penetrating.

**Question 35**

[2.5 marks] Consider a rectangular image that can store 256 unique colours. The image is 200 pixels high and 30 pixels wide. How much computer memory would be required to store this image?

- (a) 600 KB.
- (b) 6 KB.
- (c) 6 bytes.
- (d) 256 bytes.
- (e) 200 bytes.

**Question 36**

[2.5 marks] Imagine you own a 25-megapixel digital camera. You have taken a photograph using that camera. The photograph is a square. You print that photograph using a printer that has an output resolution of 5000 dots per inch. What will be the size of the printed photograph?

- (a) 0.25 inch by 0.25 inch.
- (b) 25 inches by 25 inches.
- (c) 2 inches by 2 inches.
- (d) 0.5 inch by 0.5 inch.
- (e) 1 inch by 1 inch.

**Question 37**

[2.5 marks] In the following spreadsheet which of the formulas below would be best for Cell C2? Note that the formula must be able to be filled down from C2 to C4.

	A	B	C
1	<b>Lunch Cost</b>	<b>Dinner Cost</b>	<b>Total Cost</b>
2	15	27	42
3	23	35	58
4	10	35	45

- (a) =A\$2 + \$B2
- (b) =\$A\$2 + B2
- (c) =\$A\$2 + \$B\$2
- (d) =\$A2 + \$B2
- (e) =A\$2 + B\$2

**Question 38**

[2.5 marks] In the following spreadsheet, which of the formulas below would be best for Cell G2? Note that the formula must be able to be filled down from Cell G2 to Cell G6.

	A	B	C	D	E	F	G
1					<b>Item</b>	<b>Price</b>	<b>Should I buy?</b>
2		<b>Max Price</b>	<b>Min Price</b>		Teddy Bear	\$10.00	Too low
3		\$50.00	\$25.00		Bike	\$100.00	Too high
4					Wendy House	\$35.00	OK
5					Lego Set	\$200.00	Too high
6					Robot	\$45.00	OK

- (a) =IF (F2<\$B\$3, "Too high", IF (F2>\$C\$3, "Too low", "OK"))  
 (b) =IF (F2>\$B\$3, "Too high", IF (F2<\$C\$3, "Too low", "OK"))  
 (c) =IF (\$F2>\$B3, "Too high", IF (\$F2<\$C3, "Too low", "OK"))  
 (d) =IF (F2<\$B\$3, "Too high", IF (F2>\$C\$3, "OK", "Too low"))  
 (e) =IF (F\$2>B\$3, "Too high", IF (F\$2<C\$3, "Too low", "OK"))

**Question 39**

[2.5 marks] In the following spreadsheet, which of the formulas below would be best for Cell F3? Note that the formula must be able to be filled down from Cell F3 to Cell F7.

	A	B	C	D	E	F	G
1							
2		<b>Price Table</b>				<b>Spent</b>	<b>Tickets Sold</b>
3		<b>Day</b>	<b>Price</b>		Monday	\$15	3
4		Monday	\$5		Tuesday	\$25	5
5		Tuesday	\$5		Wednesday	\$40	4
6		Wednesday	\$10		Thursday	\$70	7
7		Thursday	\$10		Friday	\$10	2
8		Friday	\$5				

- (a) =VLOOKUP (E3, \$B\$4:\$C\$8, 2, FALSE) /G3  
 (b) =VLOOKUP (F3, \$B\$4:\$C\$8, 2, TRUE) \*\$G\$3  
 (c) =VLOOKUP (E3, \$B\$4:\$C\$8, 2, TRUE) \*G3  
 (d) =VLOOKUP (E3, \$B\$4:\$C\$8, 2, FALSE) \*G3  
 (e) =VLOOKUP (E3, \$B\$4:\$C\$8, C, FALSE) \*G3

**Question 40**

[2.5 marks] In the following spreadsheet, which of the formulas below would be best for Cell E7? Note that the formula must be able to be filled down from Cell E7 to Cell E12.

	A	B	C	D	E	F	G	H
1				<b>Temperature Table</b>				
2				0	10	20	30	40
3				Cold	Cool	Comfortable	Warm	Hot
4								
5				<b>Average</b>				
6			<b>Month</b>	<b>Temperature</b>	<b>Feels like</b>			
7			Jan	45	Hot			
8			Feb	38	Warm			
9			Mar	22	Comfortable			
10			April	15	Cool			
11			May	3	Cold			
12			June	-2	#N/A			

- (a) =HLOOKUP (D7, \$D\$2:\$H\$3, 2, TRUE)
- (b) =HLOOKUP (D7, \$D\$2:\$H\$3, 3, TRUE)
- (c) =HLOOKUP (D7, \$D\$2:\$H\$3, 2, FALSE)
- (d) =HLOOKUP (D7, \$C\$2:\$H\$3, 3, TRUE)
- (e) =HLOOKUP (E7, \$D\$2:\$H\$3, 2, TRUE)