

# THE UNIVERSITY OF AUCKLAND

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TEST 2001

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## COMPUTER SCIENCE

Introduction to Computing and Applications  
(Time Allowed: ONE hour)

Surname

(Family name)

First Name(s)

(Given names)

Student ID:

**NOTE:**

Attempt **ALL** questions.

Write your answers in the space provided.

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

Calculators are **NOT** permitted

Section	Marks	Possible Marks
Hardware and Software		18
Representation of Information		12
History of Computers		9
Internet and Data Communications		20
Applications		25
Digital Images		12
HTML		4
<b>Total</b>		<b>100</b>

# Introduction to Hardware and Software [18 marks]

1. How many **Bytes** are in a KiloByte? (3 Marks)

1024

2. Circle **All** below that are true. (3 Marks)

a) ROM is volatile and RAM is non-volatile

b) RAM stands for Read Around Memory

→c) ROM stands for Read Only Memory

→d) RAM is the main memory on our system board

e) ROM is the main memory on our system board

3. List **2 different** input devices on a computer (3 Marks)

keyboard, mouse, trackball, touch screens, image scanner

4. Give an example of a **secondary storage device** (3 Marks)

hard disk, floppy disk, tape drive , optical disk

5. Number the following processors in order of slowest to fastest. Number 1 should be the slowest and number 3 the fastest. (3 Marks)

3) Intel Pentium III

1) Commodore 64

2) IBM 386

6. The \_\_\_\_\_ is the brain of the computer. (3 marks)

CPU or central processing unit

## Representation of Information [12 marks]

7. Convert the following number from binary to decimal. **11010** (4 marks)

Show your workings

	$2^4$	$2^3$	$2^2$	$2^1$	$2^0$
	1	1	0	1	0
<b>= 1x16+1x8+1x2=26</b>					

8. Convert the following number from decimal to binary. **123** (4 marks)

Show your workings

	128	64	32	16	8	4	2	1
	$2^7$	$2^5$	$2^5$	$2^4$	$2^3$	$2^2$	$2^1$	$2^0$
		1						
123-64 = 59			1					
59-32 = 27				1				
27-16 = 11					1			
11-8 = 3							1	
3-2 = 1								1
		1	1	1	1	0	1	1
<b>or use successive division:</b>								
	Remainder							
123/2	1							
61/2	1							
30/2	0							
15/2	1							
7/2	1							
3/2	1							
1/2	1							
0								
<b>= 1111011</b>								

9. Add the following 2 binary numbers. Give the answer as a binary number. (4 marks)

$$\begin{array}{r} 1010 \\ + 1111 \\ \hline \end{array}$$

**11001**

## History of Computing [9 marks]

Use the following list of names to answer the questions 10-12 below. Some names may be used more than once and some may not be used at all:

Herman Holerith, Vannevar Bush, Ada Augusta, Bill Gates, Steve Wozniak, Charles Babbage, Paul Allen, Joseph Jacquard, Steve Jobs, Blaise Pascal, Ed Roberts, Wilhelm Schikard, Dan Brinklin, Bob Frankston, Tim Berners Lee, Ted Nelson,

10. Which 2 people above were responsible for the formation of Apple Computer?  
(3 marks)

**Steve Jobs**  
**Steve Wozniak**

11. Who designed the Analytical Engine? (3 marks)

**Charles Babbage**

12. Which person above is sometimes credited as being the first computer programmer?  
(3 marks)

**Ada Augusta**

## Internet and Data Communications[20 marks]

13. The Internet uses which type of network design? (circle one)  
(2 marks)

→ a) Packet Switching

b) Circuit Switching

14. What does **modem** stand for:  
(3 marks)

**modulator / demodulator**

15. What is the user name of the person with this email address? (3 marks)  
[happy@sad.microsoft.co.nz](mailto:happy@sad.microsoft.co.nz)

**happy**

16. Which are common mediums for a data communications channel? (3 marks)  
(circle all that apply)

→ a) Microwave

b) Water

→ c) Fibre-optic

d) Cylindrical filament

e) Fibre-entrance

17. What does **IP** (of TCP/IP) stand for? (3 marks)

**Internet Protocol**

18. My web browser is (choose one) (2 marks)

→a) A client application

b) A server application

19. I want to open the web page called "home.html" at: www.auckland.ac.nz. Give the **full URL** of this page: (4 marks)

**<http://www.auckland.ac.nz/home.html>**

# Applications (25 Marks)

test.xls											
	A	B	C	D	E	F	G	H	I	J	K
1	<b>Results for the 2001 Dual-Marathon Age Based Awards</b>										
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13	<b>Surname</b>	<b>First Name</b>	<b>Age</b>	<b>Sex</b>	<b>Race</b>	<b>Point A</b>	<b>Point B</b>	<b>Total Points</b>	<b>Medal</b>		
14	Ponnampalam	Cushla Asti	43	M	2:10	10	3	36	Rope		
15	Kim	Susan Julie	25	F	3:04	45	5	115	Bronze		
16	Quizon	Kumar	31	M	2:15	1	7	17	Rope		
17	Stephen	David James	31	M	2:18	22	11	88	Blue Ribbon		
18	Cohen	Myra	21	F	2:46	32	24	184	Gold		
19	Li	Bassem	26	F	2:28	15	9	75	Blue Ribbon		
20	Tajek	Aran	80	M	5:40	12	6	48	Green Ribbon		
21	Robinson	Lillian	56	F	2:40	33	7	101	Bronze		
22	Evans	Kelly Marama	45	F	3:33	22	8	84	Blue Ribbon		
23											
24											
25											
26											
27											
28											

## Excel

Given the spreadsheet above answer the following questions.

20. The value in column H (total points) is calculated as follows. If the person is male (an M in column D) then this column is 3 times "Point A" plus 2 times "Point B". If they are Female (an F in column D) they receive 2 times "Point A" and 5 times "Point B". (You can assume that everyone must have either an M or an F in column D)

**Circle the correct formula for cell H14.**

(This formula must work correctly when we use a fill-down) (5 marks)

a) =IF(D14="M",(\$F\$14\*3)+(\$G\$14\*2),(\$F\$14\*2)+(\$G\$14\*5))

b) =IF(D14="M",F14\*3)+(G14\*2))

c) =IF(D14="M",F14\*2)+(G14\*5),(F14\*3)+(G14\*2))

→d) =IF(D14="M",F14\*3)+(G14\*2),(F14\*2)+(G14\*5))

21. Fill in the VLOOKUP formula below that should be placed in **cell I14**. We want to use the table to decide which type of medal a person will earn based on their Total Points. Remember to make sure you can use a fill-down to make this work correctly in the entire column. Make sure that you use a range of values, **not** an exact look-up(e.g. 35 will match Rope) (5 marks)

= VLOOKUP ( H14 , \$G\$5:\$H\$10 , 2 , TRUE )

22. What will be the value of the following formula?  
(Show workings for partial credit) (5 marks)

=MAX(F16,G16)+SUM(G14:G16)

Max(1,7) + sum(3+5+7)

= 7+ 3+5+7

=**22**

23. I put the formula =(\$H\$15+H16) in cell J16. I then copy it to cell J17. What is the value in the cell **J17**? (Give the resulting value not the formula)  
(4 marks)

(show workings for partial credit)

if they add numbers wrong give you can give partial credit, but the H17 is the key here.

(H16 is wrong)

=(H\$15+H17)

=115+88

=**203**

### Microsoft Word

24. Assume I have my formatting marks turned on. What does the following character mean in your word document? (2 marks)

¶

**End of paragraph / start of new line**

25. Will you see this character printed when you print out your document?  
(Circle the correct answer)

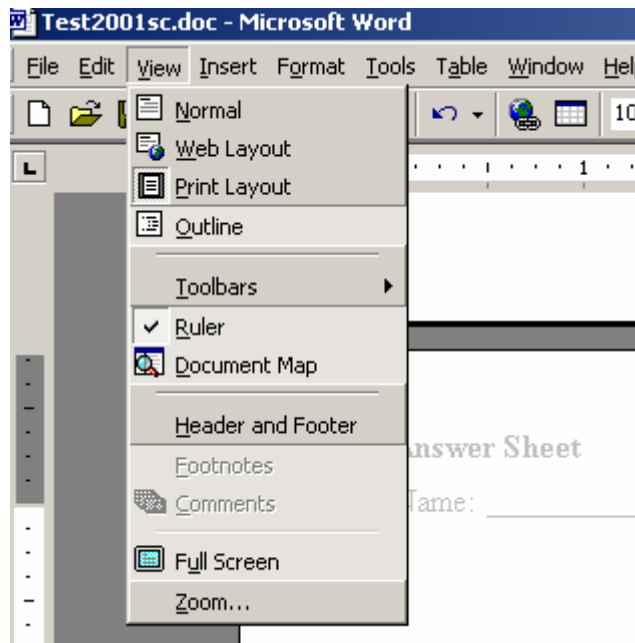


(2 marks)

Yes
<b>No</b>

26. Given the menu below which view do I need to choose if I want to see my headers/footers while I am working inside of Word? ( 2 marks)  
(Circle one)

a) Normal
<b>b) Print Layout</b>
c) Web Layout
d) Outline



## Digital Images (12 Marks)

27. If a bitmap is 10 pixels high by 10 pixels wide and uses only black and white, how much space (in bits) would be required to store the image? ( 3 marks)

You need **1** bit to hold black and white:

$$1 \times 10 \times 10 = 100 \text{ bits}$$

28. If the same image has 8 colours, how much space (in bits) would it require? ( 2 marks)

You need 3 bits to hold 8 colors:

$$3 \times 10 \times 10 = 300 \text{ bits}$$

### POV-Ray

29. Given the following POV-Ray scene

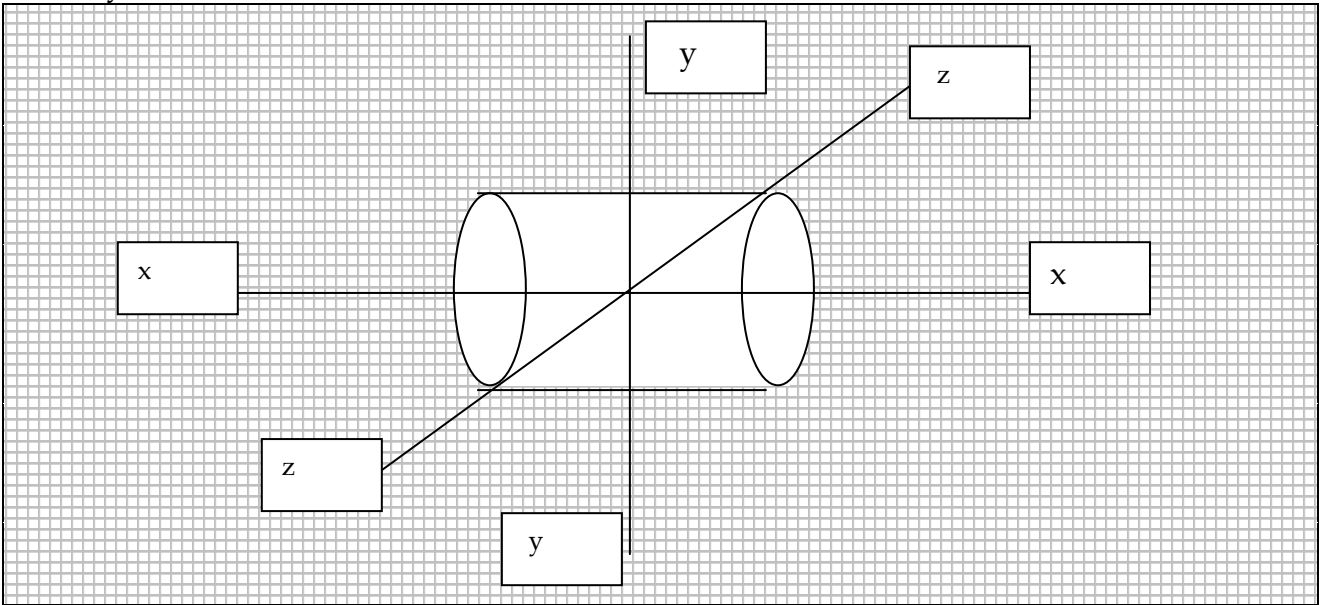
- Label the axes
- Draw the object that will be rendered.

(We are not marking for artistic ability. We will be looking for the approximate placement and orientation) (5 marks)

```
camera
{
  location <0, 0, -5>
  look_at <0.0, 0.0, 0.0>
}
light_source
{
  <3,3,-3>
  color rgb <1,1,1>
}
cylinder{
  <-1,0,0><1,0,0> 1

  texture{pigment {rgb<0,0,1>}}
}
```

Draw your scene here and label the axes.



Give some points for labelling the axes, some for drawing a cylinder and some for the correct orientation/placement of the cylinder

30. What colour will the object be? (2 marks)

<b>blue</b>
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## HTML (4 marks)

31) Give two essential HTML tags for a document: (2 marks)

```
<HTML>  
<HEAD>  
<BODY>
```

32) HTML stands for: (2 marks)

**Hypertext Markup Language**