

27. Spreadsheets (10 marks)

The following spreadsheet displays an invoice for a parallel importer that imports electronic products and watches to New Zealand.

	A	B	C	D	E	F	G	H	I
1	Item	Unit Price	Quantity	Amount	Currency	Amount in NZD		Currency	Exchange Rate
2	Google Nexus 9 (32 gig)	479.99	10	4799.90	USD	6191.87		USD	1.29
3	Orient Diver 300m	168000.00	3	504000.00	JPY	5544.00		GBP	2.02
4	Nikon D750 SLR	2570.65	5	12853.25	SGD	12596.19		EUR	1.58
5	Rega RP10 Turntable	3598.00	2	7196.00	GBP	14535.92		AUD	1.05
6	LG 79" Ultra HD LED TV	7496.00	2	14992.00	AUD	15741.60		JPY	0.011
7	Steinhart Ocean 44 GMT	470.00	3	1410.00	EUR	2227.80		SGD	0.98
8	EVGA GTX980 4GB	4344.67	10	43446.70	CNY	9123.81		CNY	0.21
9					Total:	65961.18			
10					Credit:	Yes			

- (a) What is the best formula to use in cell **D2**? Your formula should fill down from **D2** to **D8** correctly.

= B2 * C2

(1 mark)

- (b) What is the best formula to use in cell **F2**? Your answer should use the **VLOOKUP** function to retrieve the appropriate **Exchange Rate** from the **Exchange Rate Table** in cells **H2:I8**. The VLOOKUP function has the following syntax:

VLOOKUP(lookup_value, table_array, col_index_num, range_lookup)

Note: Your formula should fill down from **F2** to **F8** correctly.

= D2 * VLOOKUP (E2, \$H\$2:\$I\$8, 2, False)

(5 marks)

- (c) Cell **F9** calculates the total cost of all the items recorded in this invoice. What is the best formula to use in cell **F9**?

= SUM(F2:F8)

(1 mark)

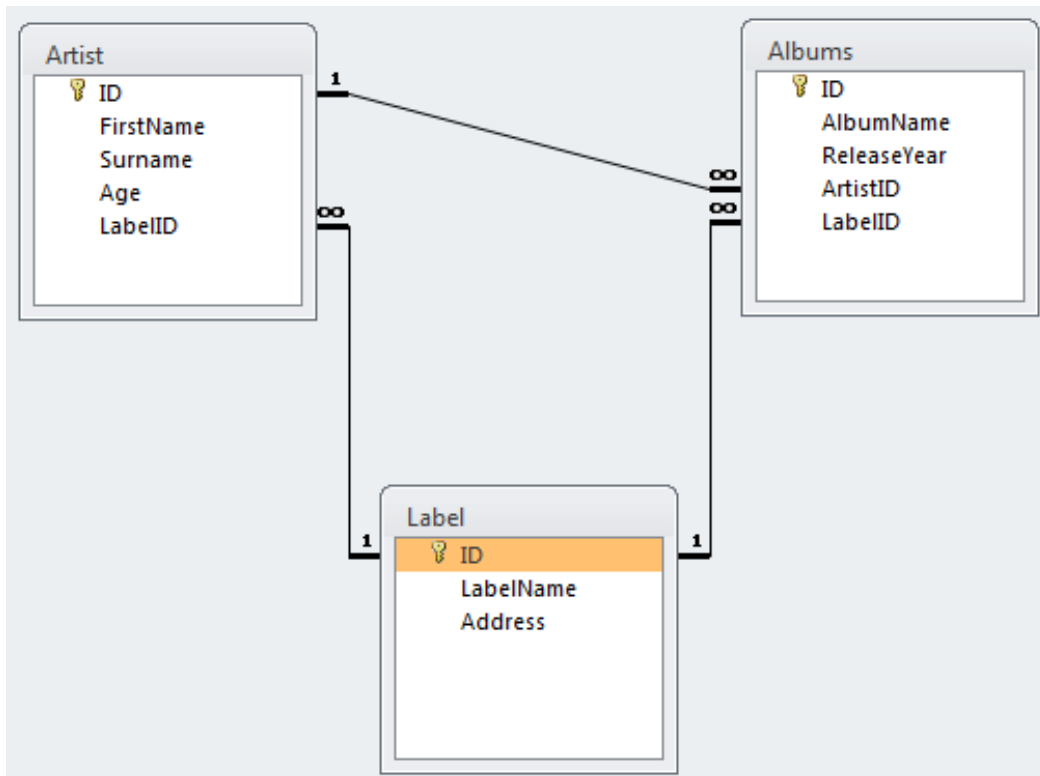
- (d) Cell **F10** displays whether or not the parallel importer needs to use credit for its purchase. Credit is required for invoices exceeding \$30000 NZD. Cell **F10** should display “**Yes**” if the invoice total exceeds 30000; otherwise it should display “**No**”. What is the best formula to use in cell **F10**? Your answer must use an **IF** function.

=IF (F9 > 30000 , "Yes" , "No")

(3 marks)

28. Databases (10 marks)

Use the following Microsoft Access relationship diagram to answer the questions in this section. Note that the primary key of each table uses the AutoNumber type to ensure uniqueness.



- (a) State the name of any foreign keys in the **Albums** table, along with their related table(s).

ArtistID (Related Table Artist)

LabelID (Related Table Label)

(1 mark)

- (b) What is the appropriate **data type** for the **ReleaseYear** field in the **Albums** table?

Number

(1 mark)

- (c) Complete the Query By Example (QBE) form below so that it generates a query that displays the **Album Name** of every album that was released after the year **1980**, as well as the **First Name** and **Surname** of the artist, and the **Label Name** of the record company. Some example results might be:

AlbumName	FirstName	Surname	LabelName
Crush Songs	Karen	O	Cult Records
Several Shades Of Why	J	Mascis	Sub Pop Records
Born In The U.S.A.	Bruce	Springsteen	Columbia

Field:	Album Name	FirstName	Surname	LabelName	Release Year
Table:	Albums	Artist	Artist	Label	Albums
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:					>1980
or:					

(4 marks)

- (d) Write an SQL query that displays the **First Name** and **Surname** of every **Artist** with an **Age** older than **25**. The results should be sorted in **ascending order** based on the artist's **Surname**. Some example results from the query might be:

FirstName	Surname
J	Mascis
Karen	O
Bruce	Springsteen

```

SELECT FirstName, Surname
FROM Artist
WHERE Age > 25
ORDER BY Surname;
    
```

(4 marks)

29. LaTeX (10 marks)

On the following page, complete the LaTeX code that will produce the output below:

Mathematics

A. Mathematician

June 2015

1 Math Formulas

1.1 Sine Approximation

$$\sin(x) = \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{2n+1} = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots \quad (1)$$

1.2 Surface Area of a Right Circular Cone

$$A = \pi r \left(r + \sqrt{h^2 + r^2} \right) \quad (2)$$

where

- r is the **radius** and
- h is the **height**.

The following LaTeX commands have been included as a reference. You will not need to use all of these commands. Note that the basic document structure has been completed for you.

<i>Normal commands</i>	<i>Environments</i>	<i>Math mode commands</i>
<code>\emph{}</code>	<code>itemize</code>	<code>\$</code>
<code>\section{}</code>	<code>enumerate</code>	<code>\sqrt{}</code>
<code>\subsection{}</code>	<code>verbatim</code>	<code>\infty</code>
<code>\subsubsection{}</code>	<code>flushright</code>	<code>\frac{ }{ }</code>
<code>\large</code>	<code>center</code>	<code>\left(</code>
<code>\textbf{}</code>	<code>quote</code>	<code>\right)</code>
<code>\title{}</code>	<code>displaymath</code>	<code>\pi</code>
<code>\author{}</code>	<code>equation</code>	<code>\sum_{ }^{ }</code>
<code>\date{}</code>	<code>quotation</code>	<code>\cdots</code>
<code>\maketitle</code>		<code>^</code>
<code>\item</code>		<code>-</code>

```
\documentclass[a4paper]{article}
\begin{document}
\title{Mathematics}
\author{A. Mathematician}
\date{June 2015}
\maketitle
\section{Math Formulas}
\subsection{Sine Approximation}
\begin{equation}
\sin(x) = \sum_{n=0}^{\infty}
\frac{(-1)^n x^{2n+1}}{(2n+1)!}
= x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots
\end{equation}
\subsection{\emph{Surface Area} of a Right Circular Cone}
\begin{equation}
A = \pi r \left( r + \sqrt{h^2 + r^2} \right)
\end{equation}
where
\begin{itemize}
\item  $r$  is the radius and
\item  $h$  is the height.
\end{itemize}
\end{document}
```

(10 marks)

30. HTML5 and CSS (10 marks)

The following screenshot shows the body of a web page created using HTML5 and CSS:



Complete the HTML5 code below so that it produces the output shown above.

You **must** use the styles defined in the internal style sheet in the head section below, and **must not** define any new styles.

Note: The url for the FIFA Club World Cup webpage is:
"http://www.fifa.com/clubworldcup".

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>HTML5 Exam Question</title>
<style type="text/css">
h1, h2{
  background-color: #C0C0C0;
  text-align: center;
  font-family:sans-serif;
}
table, tr, td{
  border: 1px solid black;
}
#tableheader{
```

```
font-size: large;
font-weight: bold;
text-align: center;
}

.position{
text-align: center;
}
</style>
</head>

<body>

<!-- Main Heading -->
```

```
<h1>FIFA Club World Cup</h1>
```

(1 mark)

```
<!-- "About" section -->
```

```
<section>
<h2>About</h2>
<p>
The <a href="http://www.fifa.com/clubworldcup">FIFA Club
World Cup</a> is an annual international football competition
started in 2000.
</p>
</section>
```

(3 marks)

```
<!-- "Some Past Winners" section -->
```

```
<section>
<h2>Some Past Winners</h2>
<ul>
<li>Barcelona (2 titles)</li>
<li>Corinthians (2 titles)</li>
</ul>
</section>
```

(2 marks)


```
<!-- "2014 Tournament" section -->
```

```
<section>
<h2>2014 Tournament</h2>
<table>
  <tr id = "tableheader">
    <td>Position</td>
    <td>Team</td>
  </tr>
  <tr>
    <td class = "position">1</td>
    <td>Real Madrid</td>
  </tr>
  <tr>
    <td class = "position">2</td>
    <td>San Lorenzo</td>
  </tr>
  <tr>
    <td class = "position">3</td>
    <td>Auckland City</td>
  </tr>
</table>
</section>
```

(4 marks)

```
</body>
```

```
</html>
```

SECTION B

Answer all questions in this section in the space provided. If you run out of space, please use the Overflow Sheet and indicate in the allotted space that you have used the Overflow Sheet.

26. Programming Using Python (10 marks)

- (a) Write a Python program that prompts the user for a positive integer number. The user may enter a positive, zero, or negative value. The program should print out the *sum of the squares from 1 to the input number* if the number entered by the user is positive, and it should tell the user about the input error otherwise.

The following **two examples** show the exact formatting expected for the prompts and output. Your program must produce the same output as shown below given the input shown below.

Example 1:

```
Please enter a positive integer: 3  
The answer is 14
```

Example 2:

```
Please enter a positive integer: -2  
You did not enter a positive integer.
```

```
limit = int(input("Please enter a positive integer: "))  
  
if limit < 1:  
    print("you did not enter a positive integer.")  
else:  
    answer = 0  
    number = 1  
    while number <= limit:  
        answer = answer + number * number  
        number = number + 1  
    print ("The answer is", answer)
```

(4 marks)

(b) Show the output from the following program.

```
x = 2
y = 4
z = 15
while z >= x + y:
    print(z)
    if z % 3 == 0:
        z = z - y
    else:
        z = z - x
```

15
11
9

(3 marks)

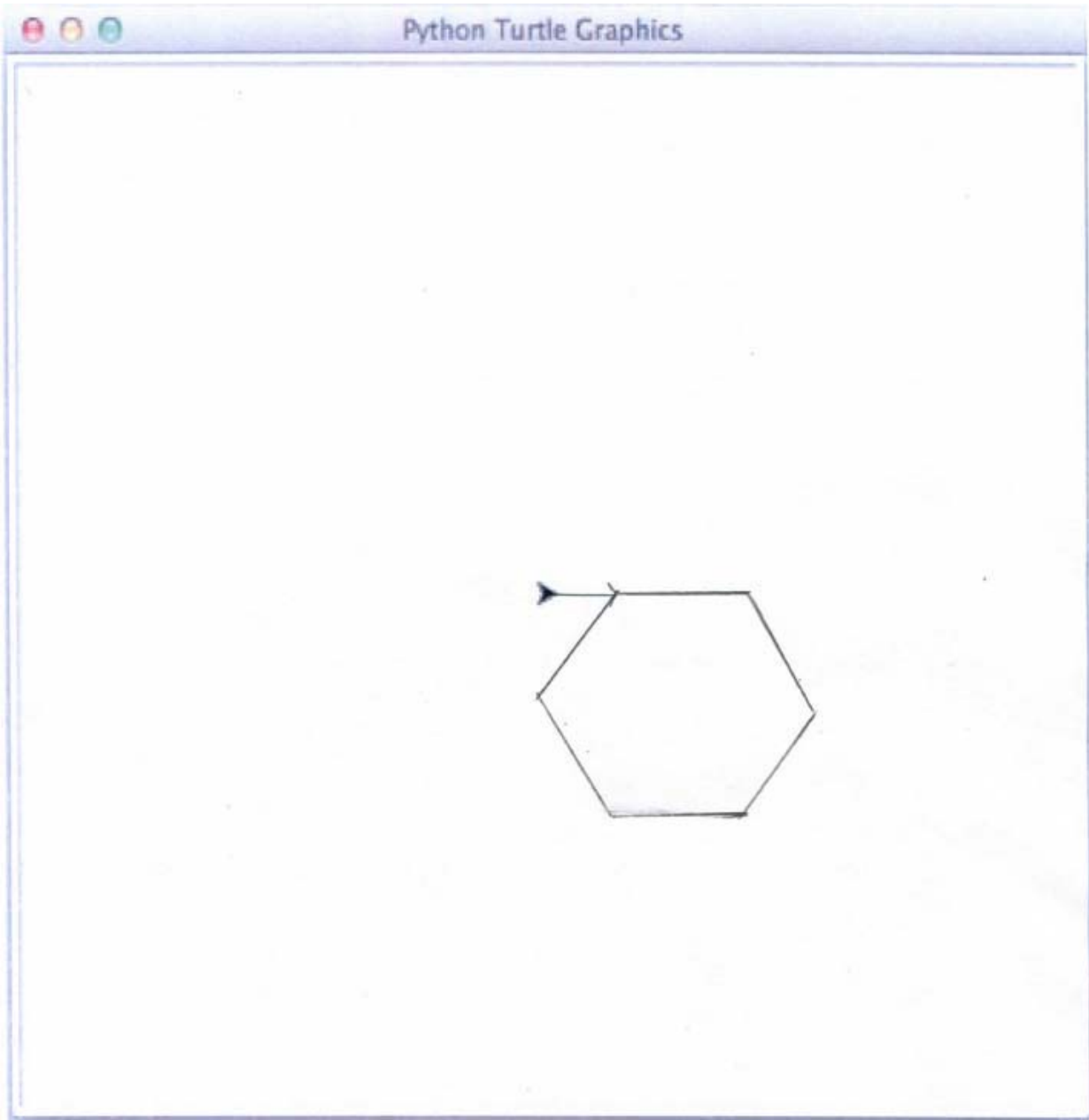
(c) On the following page, draw the output produced by the turtle in the following Python program. Assume that the turtle begins in the middle of the window facing right and that the window is approximately 800 steps wide.

```
import turtle

sides = 6
angle = 360/sides
count = 0

turtle.forward(50)
while count < sides:
    turtle.forward(100)
    turtle.right(angle)
    count = count + 1
```

CONTINUED



(3 marks)