CITY UNIVERSITY LONDON
Excel VBA Practical Test

14th of January 2008

Group B

This is an open book exam. You may use your lecture notes as well as task- and solution-sheets from previous lab-sessions.

Write your answers in the booklet provided.

Full marks may be obtained for correct answers to all four questions. Each questions carries 25 marks.

To avoid possible accusations of cheating close all other applications except Excel before starting this exam.

Time: You have 90 mins to complete this test.

Turn over...

1) i) (7 points) Write down the command line for a combination of Excel built-in functions which produces the following function

$$f(x) = \begin{cases} \cos(x) & \text{for} & 0 \le x \le 2 \\ \cos(\frac{x^2}{2}) & \text{for} & x > 2 \\ 1 & \text{for} & x < 0 \end{cases} \qquad (1)$$

Use your function to compute $f(0)$ and $f(3)$.

ii) (7 points) Write a user defined function called $g(x)$ that produces exactly the same function of part i) by employing a **SELECT CASE** structure. Compute the values $g(-1)$ and $g(9)$.

iii) (11 points) Write down the function (in a form similar to equation (1)) that is produced by the following combination of Excel built-in functions:

$$= \text{IF}(\text{AND}(x >= -1, x < 0), x+1, \text{IF}(\text{AND}(x >= 0, x < 2), 1-3x, \text{IF}(x >= 2, -5, 0))).$$

Produce a sketch of the function above in your answer booklet.

2) (25 points) Enter the table below in the range A1:D4 of your Excel worksheet:

2	5	7	Monday
3	9	8	Tuesday
4	43	50	Thursday
5	91	111	Friday

In this exercise we want to extract information from the table above by employing the **VLOOKUP** and **HLOOKUP** Excel built-in functions. In each of the following lines, we have written an Excel built-in function on the l.h.s. and its output on the r.h.s. Fill in the blank spaces on the l.h.s. of each line so that the given output is produced:

$= \textbf{VLOOKUP}(2, \text{A1:D4}, \quad)$	$\rightarrow$	7
$= \textbf{VLOOKUP}(3.8, \text{A1:D4}, \quad)$	$\rightarrow$	8
$= \textbf{VLOOKUP}(20, \text{C1:D4}, \quad)$	$\rightarrow$	Tuesday
$= \textbf{HLOOKUP}(3.8, \text{A1:D4}, \quad)$	$\rightarrow$	5
$= \textbf{HLOOKUP}(9, \text{A2:D4}, \quad)$	$\rightarrow$	91
$= \textbf{HLOOKUP}(9, \text{A1:D3}, \quad)$	$\rightarrow$	50
$= \textbf{VLOOKUP}(7, \qquad, 2)$	$\rightarrow$	Monday
$= \textbf{VLOOKUP}(8, \qquad, 2)$	$\rightarrow$	7
$= \textbf{VLOOKUP}(8.2, \qquad, 2)$	$\rightarrow$	Tuesday
$= \textbf{HLOOKUP}(3, \qquad, 2)$	$\rightarrow$	3
$= \textbf{HLOOKUP}(4, \qquad, 3)$	$\rightarrow$	5
$= \textbf{HLOOKUP}(8, \qquad, 2)$	$\rightarrow$	5
$= \textbf{VLOOKUP}(\quad, \text{A1:D4}, 4, \text{FALSE})$	$\rightarrow$	Monday
$= \textbf{VLOOKUP}(\quad, \text{B1:D3}, 2, \text{FALSE})$	$\rightarrow$	8
$= \textbf{VLOOKUP}(\quad, \text{B2:D3}, 2, \text{FALSE})$	$\rightarrow$	8
$= \textbf{HLOOKUP}(\quad, \text{B1:D4}, 4, \text{FALSE})$	$\rightarrow$	Friday
$= \textbf{HLOOKUP}(\quad, \text{A2:D4}, 3, \text{FALSE})$	$\rightarrow$	5
$= \textbf{HLOOKUP}(\quad, \text{A2:D3}, 2, \text{FALSE})$	$\rightarrow$	43

Turn over...

3) i) (18 points) Use an **IF...ELSEIF** structure to produce a user defined function called **whichmonth**. The function should take a date as input and produce the following output:

- If the date falls on one of the first six months of the year (that is January to June, both included), then it should output the name of the month (that is, if the month was April, then the output of the function should be the word "April").
- If the date falls on any of the other months of the year (that is July to December, both included) then your program should produce the output: "This date falls on the second half of the year"
- In the program you should define all variable types, both for the input and for the output of your function.
- Obtain the value of the function for the input date 02/02/1966.

ii) (7 points) Draw a flow chart corresponding to your programme.

4) Consider the table given below and suppose that you enter the data on this table into the range E1:H6 of your Excel worksheet:

Employee's name	W1	W2	W3
Lu	40	45	42
Hoang	35	46	50
Mann	40	40	46
Yin	34	50	45
Patel	60	55	40

The first column of the table contains the names of several employees of a company. The second, third and fourth columns contain information about the number of hours that each of this employees has worked in the first, second and third weeks after the start of their contract, respectively. This exercise has three parts:

i) (10 points) Write the code of a user defined function called **numhour** that takes the name of a given employee as input produces the average number of hours per week that he/she has worked over the first three weeks of his/her contract as output. The program should employ the worksheet function **VLOOKUP** and all variable types (both for the input and the output of the function should be defined)

ii) (10 points) The second function should be called **work** and take again as an input the name of a certain employee. The function **work** should make use of the function **numhour** defined in i) and employ a **SELECT CASE** structure. Depending on the name of the employee, the function should return one of the following values:

- If the average number of hours of work per week is lower than 40 it should return the message: "not enough work"
- If the average number of hours of work per week is bigger or equal 40 and smaller than 45 it should return the message: "decent performance"
- If the average number of hours of work per week is larger than 44 then it should return the message: "to be recommended for promotion"

iii) (5 points) Compute numhour("Lu") and work("Lu").

Internal examiner: Dr. Olalla Castro-Alvaredo