Exam Group B (Solutions)

1) (25 points)

a) Compute the future value of an investment using the Excel built-in function FV. For an initial deposit of 5750 Euro in a savings account the bank pays an interest rate of 0.25%. For the next years the owner of the account plans to deposit 350 Euros at the beginning of every month into the account. How much money is in the account after 7 years. Provide the exact command line for an Excel built-in function with all its arguments.

b) Write down the command line for an Excel built-in function which produces the function

$$f(x) = \begin{cases} (x-12)/3 & \text{for} \quad x \leq 5 \\ 3x^2 - 5x & \text{for} \quad x > 5 \end{cases} .$$

Use your the function to complete the following table:

x	-1.25	5	5.9	111.8
$f(x)$				

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a) =FV(0.25%,84,-350,-5750,1) [10]

After 5 years there are 39,843.14 Euros in the account. [2]

b) =IF(x<=5, (x-12)/3, 3*x ^2-5*x) [9]

x	-1.25	5	5.9	111.8
$f(x)$	$-4.41\overline{6}$	$-2.\overline{3}$	74.93	36938.72

[4]

2) (25 points)

a) Write a user defined function called MaxMin, which computes for an arbitray amount of input variables the minimum MI and the maximum MA of these variables. The function MaxMin should return the value

$$\frac{MA-3}{(MI-4)^2}$$

when $MI-4 \neq 0$ and the error message "Division by zero!" otherwise.

b) Use your function to complete the following table:

x	y	z	MaxMin(x,y,z)
6	8	5	
12	4	9	
-2	75	27	

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a) Function MinMax(range) As Variant [2]
    Dim Mi, Ma As Integer [2]
    Ma = WorksheetFunction.Max(range) [2]
    Mi = WorksheetFunction.Min(range) [2]
    If Mi = 4 Then [11]
        MinMax = "Division by zero!"
    Else
        MinMax = (Ma - 3) / (Mi - 4) ^2
    End If
End Function

b) The table should be:

x	y	z	MaxMin(x,y,z)
6	8	5	5
12	4	9	Division by zero!
-2	75	27	2

[6]

3) a) (16 points) Consider the following table and complete the command lines and output below, i.e. replace the *** with the appropriate data

	A	B	C	D	E
1	Name	Street	Number	Code	Phone
2	S. Holmes	Baker Street	221b	NW1	0207-040111
3	S. Rushdie	St. Peter's Street	41	N1	0207-140712
4	G. Orwell	Canonbury Square	27b	N1	0207-780669
5	W. Blake	Broad Street	28	W1	0207-767884
6	J. Joyce	Campden Grove	28b	W8	0207-334015
7					

In case there is more than one solution present all of them.
=VLOOKUP("G. Orwell", *** ,2) → Canonbury Square
=VLOOKUP(***, A2:E6 ,4) → N1
=VLOOKUP("Broad Street",***,3,***) → W1
=VLOOKUP("Oxford Street",B3:E7,3,***) → #N/A
=HLOOKUP("Baker Street",B2:E6,***,***) → Broad Street
=HLOOKUP("NW3",B2:E6,***) → 0207-767884

b) (16 points) Write a user defined function called Address, with two input parameters. The first input parameter is the name of a person. The function selects from the table in a), by means of a VLOOKUP, for a given name, the street, the number of the house, the postal code or the phone number, when the second input parameter is "Road", "Number", "Code" or "Phone", respectively. When the wrong command is used for the second input parameter produce the error message "Command not found!". Declare all your variables.

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a) =VLOOKUP("G. Orwell", A2:E6 ,2) → Canonbury Square [2]
=VLOOKUP("S. Rushdie", A2:E6 ,4) → N1 [2]
and =VLOOKUP("G. Orwell", A2:E6 ,4) → N1 [2]
=VLOOKUP("Broad Street",B2:E6,3,FALSE) → W1 [2]
=VLOOKUP("Oxford Street",B3:E7,3,FALSE) → #N/A [2]
=HLOOKUP("Baker Street",B2:E6,4,FALSE) → Broad Street [2]
=HLOOKUP("NW3",B2:E6,4) → 0207-767884 [2]

b) Function Add(na As String, command As String) As String [2]

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    Select Case command
        Case "Street": Add = WorksheetFunction.VLookup(na, [A2:E6], 2, False)
        Case "Number": Add = WorksheetFunction.VLookup(na, [A2:E6], 3,
False)
        Case "Code": Add = WorksheetFunction.VLookup(na, [A2:E6], 4, False)
        Case "Phone": Add = WorksheetFunction.VLookup(na, [A2:E6], 5, False)
        Case Else: Add = "Command not found!"
    End Select
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End Function