Exam A: Solution

Question 1: The three required codes are:

```
Function g(k)
g = k ^ 3 + 2 * k + 1
End Function
```

```
Sub sumg()
n = Range("a1").Value
k = 1
Do While k < n + 1
a = a + g(k)
k = k + 1
Loop
Range("b1").Value = a
End Sub
```

```
Function expo(n)
For k = 1 To n
expo = expo + 3 ^ k
Next k
End Function
```

For $n = 3$ the sum is 51 and for $n = 9$ it is 2124.

Marks: 10 points for i), 5 points for ii) and 10 points for iii)

Question 2: The answers are:

	A	B	C	D	E	F	G	H	I
1	1	0,3							
2	2	0,35		The slope is:	0,049818				
3	3	0,39		The intercept is:	0,252				
4	4	0,43		The output of linest is:					
5	5	0,51		0,049818182	0,252				
6	6	0,58		0,002091568	0,012978				
7	7	0,62		0,986094814	0,018998				
8	8	0,66							
9	9	0,7							
10	10	0,72							
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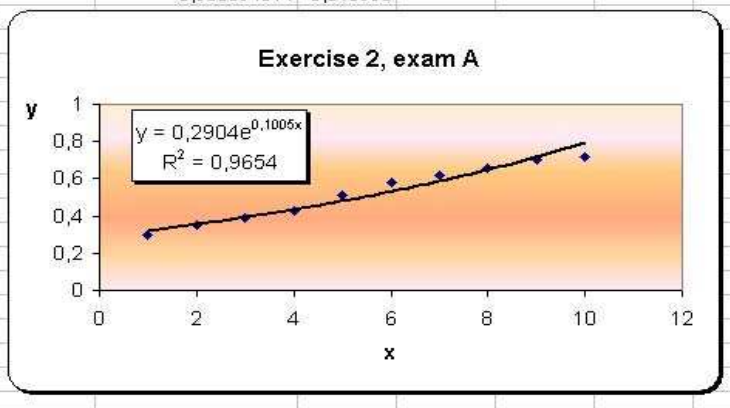

Marks: 8 points for i), 8 points for ii) and 9 points for iii)

Question 3: A possible code would be:

```
Sub avproduct()
Dim A, v As Variant
A = Range("A1:B2").Value
v = Range("A3:A4").Value
Dim pro(1 To 2, 1 To 1)
i = 1
pro(1, 1) = 0
pro(2, 1) = 0
Do Until i = 3
pro(1, 1) = pro(1, 1) + A(1, i) * v(i, 1)
pro(2, 1) = pro(2, 1) + A(2, i) * v(i, 1)
i = i + 1
Loop
Range("D1").Value = "The product vector is:"
Range("E1:E2").Value = pro
End Sub
```

Marks: 8 points for correct variable definition, 9 points for correct loop structure, 8 points for correct display of the program's output.

Question 4: The code would be:

```
Sub signcheck()
1
t = "sign-check"
p1 = "Enter here a real number:"
t1 = "First number"
p2 = "Enter here another real number:"
t2 = "Second number"
p3 = "the product is negative"
p4 = "the product vanishes"
p5 = "the product is positive"
p6 = "this is not a number"
n1 = InputBox(p1, t1)
n2 = InputBox(p2, t2)
If n1 * n2 < 0 Then
ret = MsgBox(p3, 0, t)
Range("a1").Value = n1 * n2
ElseIf n1 * n2 = 0 Then
ret = MsgBox(p4, 64, t)
Range("a1").Value = n1 * n2
ElseIf n1 * n2 > 0 Then
ret = MsgBox(p5, 16, t)
Range("a1").Value = n1 * n2
Else
ret = MsgBox(p6, 48, t)
GoTo 1
End If
End Sub
```

Marks: 5 points for correct variable definition, 5 points for correct InputBox structure, 5 points for correct If structure, 10 points for correct MsgBox structure and WS display of $n1 * n2$.

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