You have 1 hr for this Quiz. The quiz is “closed books and notes” - in addition, no electronic devices of any kind (e.g. calculators or PDAs) are permitted. Please show your answers in the green “boxes” provided; the back of the sheets can be used for additional or scratch work.

Name: _______________________________________

Pledge (please complete): I pledge my honor that ______________________________________

1. (5%) How many different characters can be represented using 2 bytes?

2. (5%) Which Visual Basic number “type” would you use if you wanted a calculation that carried the maximum possible number of significant figures?

3. (10%) What is the value of variable \( i \) at the end of the following code segment?

\[
\text{Dim } i \text{ As Integer } = 3 \\
\text{Dim } y \text{ As Integer } = 4 \\
\text{Dim } z \text{ As Single } = 1.3 \\
i = i \div y + z \times i
\]

Value of \( i \) after the last line executes:  

4. (10%) What is the value of the variable \( y \) at the end of the following segment code?

\[
\begin{align*}
\text{Dim } x, y & \text{ As Boolean} \\
\text{Dim } a, b & \text{ As Integer} \\
y & = \text{True} \\
a & = 13 : b = 8 \\
x & = a > 2 \times b \\
y & = \text{Not } (x \text{ Or } a > b)
\end{align*}
\]

Value of \( y \) after the last line executes:

5. (10%) What is the value of \( j \) after the last line of the code segment below executes?

\[
\begin{align*}
\text{Dim } i & \text{ As Integer } = 3 \\
\text{Dim } j & \text{ As Integer } = 5 \\
\text{If } & i > j \text{ Then} \\
\quad & i = j \\
\text{Else if } & i > j \mod i \\
\quad & i = j ^ 2 \\
\text{Else} \\
\quad & i = i \times j \\
\text{Endif}
\end{align*}
\]

Value of \( i \) after the last line executes:

6. (10%) What is the value of Total after the last line of the code segment below executes?

\[
\begin{align*}
\text{Dim } N, \text{ Total } & \text{ As Integer} \\
\text{Total } & = 0 \\
\text{For } & N = 5 \text{ To } 2 \text{ Step } -2 \\
\quad & \text{Total } = \text{Total } + 2 \times N \\
\text{Next } N \\
\text{MsgBox}(\text{Total})
\end{align*}
\]

Value of Total after the last line executes:
7. (10%) Refer to the following code segment:

```vbnet
Dim A() As Integer = {1, 3, 2}
Dim B(3) As Integer
B = A
Msgbox(B(3))
```

What will happen when the last line of this code segment executes? Why?

8. (15%) Consider the following "Main" program and a function procedure "Prod":

```vbnet
Sub Main()
    Dim i, j As Short
    i = 3 : j = 4
    i = Prod(i, j)
    MsgBox("i = " & i & " j= " & j)
End Sub

Function Prod(ByRef A As Short, ByRef B As Short) as Short
    B = Math.Min(A, B)
    Prod = A * B
End Sub
```

What is the value of `i` printed by the "Msgbox" command when it executes? Why? What is the value of `j` printed by the "Msgbox" command when it executes? Why?
9. (25%) You are asked to complete the following subroutine, so that a square array A of size LxL is initialized when the routine is called with the following pattern:

\[
\begin{array}{cccccccc}
0 & 1 & 2 & 1 & 2 & 1 & \ldots \\
1 & 0 & 1 & 2 & 1 & 2 & \ldots \\
2 & 1 & 0 & 1 & 2 & 1 & \ldots \\
1 & 2 & 1 & 0 & 1 & 2 & \ldots \\
2 & 1 & 2 & 1 & 0 & 1 & \ldots \\
1 & 2 & 1 & 2 & 1 & 0 & \ldots \\
\ldots & \ldots & \ldots & \ldots & \ldots & \ldots & \ldots \\
\ldots & \ldots & \ldots & \ldots & \ldots & \ldots & \ldots \\
\ldots & \ldots & \ldots & \ldots & \ldots & \ldots & \ldots \\
\end{array}
\]

\[A = \]

Sub InitSquare(ByVal L As Integer, ByRef A(,) As Integer)
' write your code in the square box below
End Sub