Group B (Solution)

1) i) =IF(x>=0, SQRT(11*x^5),"complex value") [8]

$f(-1)$ = complex value, $f(25) = 10364.45247$ [2]

ii) [7+6]

$$f(x) = \begin{cases} 7x^2 & \text{for} \quad x \leq -10 \\ \sin x & \text{for} \quad -10 < x \leq 6 \\ \cos x & \text{for} \quad 6 < x \leq 15 \\ 7x^2 & \text{for} \quad 15 < x \end{cases} \qquad g(x) = \begin{cases} 0 & \text{for} \quad x \leq -1 \\ 1 & \text{for} \quad -1 < x \leq 6 \\ 0 & \text{for} \quad 6 < x \end{cases}$$

$f(0) = 0$, $g(0) = 1$, $f(15)$ =-0.759687913, $g(15) = 0$ [2]

2) Function condsum(cond As String, ca As Integer) As Variant [20]

```
    Select Case ca
    Case 1: condsum = WorksheetFunction.SumIf([A1:A10], cond, [A1:A10])
    Case 2: condsum = WorksheetFunction.SumIf([A1:A10], cond, [B1:B10])
    Case 3: condsum = WorksheetFunction.SumIf([A1:A10], cond, [C1:C10])
    Case 4: condsum = WorksheetFunction.SumIf([A1:A10], cond, [D1:D10])
    Case Else: condsum = "Use case 1,2,3 or 4!"
    End Select
End Function
```

=condsum(">0",4)→ 2468, =condsum("<>0",2)→ 215, [5]

=condsum("<50",2)→ 159, =condsum("<=3",3)→ 36

3) Function dates(x As Date, y As Date) As String [20]

```
Dim day1, day2 As Integer
    day1 = Weekday(x)
    day2 = Weekday(y)
    If day1 = day2 Then
        If day1 = 2 Then
            dates = "Both dates fall on a Monday."
        Else
            dates = "The weekday for the two dates is the same."
        End If
    Else
        dates = "The weekdays for the two dates are different."
    End If
End Function
```

Charles Babbage and Winston Churchill are born on the same weekday. [5]

4) Function MW(sb1 As String, n1 As Integer, sb2 As String, n2 As Integer) As Double [21]

```
' this is a molecular weight calculator
    Dim w1, w2 As Single
    w1 = WorksheetFunction.VLookup(sb1, [A1:D110], 4, False)
    w2 = WorksheetFunction.VLookup(sb2, [A1:D110], 4, False)
    MW = Round(n1 * w1 + n2 * w2, 2)
End Function
```

$SO_2 \rightarrow 64.06$ and $As_4O_6 \rightarrow 395.68$ [4]