Exam Prep Questions MARKING SCHEME (46 Marks)

1. State the most suitable data type for storing the following items: (3)
    a. Post code STRING
    b. Yes or No response BOOLEAN
    c. Price of an item SINGLE/REAL

2. State the output from the following code: (3)
    a. LINE 1 DECLARE price INITIALLY 1.99
    LINE 2 DECLARE quantity INITIALLY 5
    LINE 3 SET total TO price * quantity
    LINE 4 SEND total TO DISPLAY
    9.95

    b. LINE 1 DECLARE numPupils INITIALLY 20
    LINE 2 DECLARE total INITIALLY 160
    LINE 3 SET average TO total / numPupils
    LINE 4 SEND average TO DISPLAY
    8

    c. LINE 1 DECLARE first INITIALLY 3
    LINE 2 DECLARE second INITIALLY 2
    LINE 3 SET third TO first ^ second
    LINE 4 SEND third TO DISPLAY
    9

3. Read the code below and identify the type of error in each one and rewrite the code to show how to fix the error: (6)
    a. LINE 1 DECLARE age INITIALLY “”
    LINE 2 RECEIVE age FROM keyboard
    LINE 3 SND “Your age is : & age TO DISPLAY
    Syntax error (line 3) – SEND “Your age is : “ & age TO DISPLAY

    b. LINE 1 DECLARE price INITIALLY 1.99
    LINE 2 RECEIVE quantity FROM keyboard
    LINE 3 SET total TO price / quantity
    Logic error (line 3) – SET total to price * quantity

    c. LINE 1 DECLARE price INITIALLY 1.99
    LINE 2 SET total TO price * quantity
    LINE 3 RECEIVE quantity FROM keyboard
    Logic error – Line 2 & 3 in the wrong order

    d. LINE 1 DECLARE cost as “”
    LINE 2 SET total TO cost ^ 2
    LINE 3 SEND “The total is “ & total TO DISPLAY
    Execution error – Cost declared as a string but then used in a calculation

4. A program is required to take in the number of items available for sale on a garden centre website. The minimum number is 0 and the maximum number in stock of any product is 25. Give an example of normal, extreme and exceptional test data for this program. (3)
   Normal – any number 1 to 24
   Extreme – 0 or 25
   Exceptional – any negative number or any word

5. A program is required to ensure that a user can only enter a minimum car speed of 0mph and maximum speed of 75mph. If a speed is entered below or above this speed then an error message should be displayed. Using a design technique of your choice, design an efficient solution to ensure that the program will only accept valid speeds from the user. (4)
   Input Validation:

```
Do
        Speed = Inputbox("Please enter the speed of the car")
        If speed < 0 or speed > 75 Then
                Msgbox("Please enter a speed between 0 and 75")
        End if
Loop Until speed >=0 and speed <=75
```

6. Complete the table below. The first one has been done for you (3):

Example	**Construct**
Total = 0.0	Assigning value to a variable
airportCode & country & airline	Concatenation
If population > 100000 then	Conditional statement
New = Round(number, 2)	Predefined function - round

7. Identify the logical operators and/or arithmetic operators in the following code: (3)

   a. IF age > 13 AND age < 18 THEN

      Msgbox("You are eligible for a discounted ticket")

      END IF

      >, <, AND

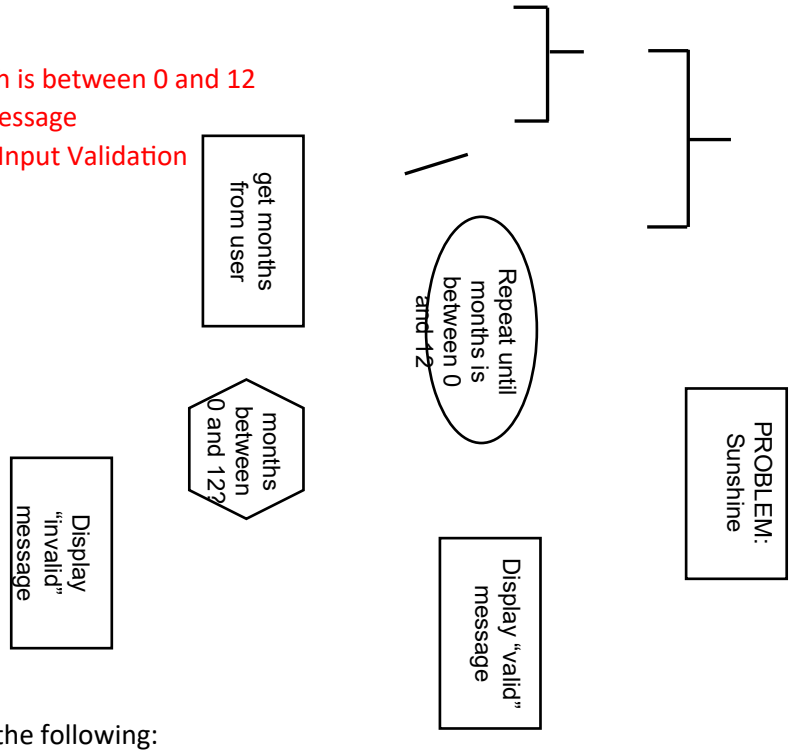
   b. IF userPassword = NOT(correctPassword) THEN
      Msgbox("Incorrect – try again)
      Attempts = attempts + 1

      END IF

      NOT

8. Look at the program design below and identify the following:

   a. Input (1) Months
   b. Process (1) Checking If month is between 0 and 12
   c. Output (1) Valid or Invalid Message
   d. Standard algorithm used (1) Input Validation
   e. Type of loop used (1) Fixed



9. Look at the code below and identify the following:

```
Line 1   Dim months As Integer
Line 2           Do
Line 3              months = InputBox("How many months had 10 days of sunshine?")
Line 4              If months < 0 Or months > 12 Then
Line 5                MsgBox("Please enter a valid number of months")
Line 6              End If
Line 7           Loop Until months >= 0 And months <= 12
Line 8   txtOutput.AppendText("Thank you. That is valid")
```

   a. Line containing a complex condition (1) Line 4
   b. Line declaring a variable (1) Line 1
   c. Line with user output (1) Line 8
   d. Line containing a conditional loop (1) Line 2 to 7

10. Rewrite the following lines of code in a more efficient way (6):

    a. IF finalCost <= 100 THEN
            Discount = finalCost – 10

       END IF

       IF finalCost > 101 THEN

            Discount = finalCost – 25

       END IF

       IF finalCost <=100 Then

            Discount = finalCost -10

       Else

            Discount = finalCost – 25

       End If

    b. Age(0) = Inputbox("Please enter your age")
       Age(1) = Inputbox("Please enter your age")
       Age(2) = Inputbox("Please enter your age")
       Age(3) = Inputbox("Please enter your age")
       Age(4) = Inputbox("Please enter your age")

       For index = 0 to 4

            Age(index) = Inputbox("Please enter your age ")

       Next

11. Write the code to do the following:
    a. Generate a random number between 1 and 15 (2)
       Randomize()
       randomNumber = Int(Rnd()*15) +1
    b. Store the length of a user's password in a variable called passwordLength (2)
       passwordLength = Len(userPassword)
    c. Round the variable average test score to 1 decimal place (2)
       RoundedAverage = Math.round(averageTestScore, 1)