Name: Class: Mark:

1. An algorithm is given below.

1. DECLARE ID : ARRAY[1,7] OF INTEGER
2. ID ← [45, 33, 27, 88, 103, 66, 71]
3. OUTPUT "Please enter ID number to find"
4. INPUT NumberSought
5. Found ← False
6. n ← LENGTH(ID)
7. k ← 1
8. WHILE NOT Found AND k < n
9. IF NumberSought = ID[k]
10. THEN
11. Found ← True
12. ENDIF
13. k ← k + 1
14. ENDWHILE
15. IF Found
16. THEN
17. OUTPUT "ID is in the list at index ", k
18. ELSE
19. OUTPUT "ID is not in the list"
20. ENDIF

(a) What value is assigned to n at line 6? [1]

(b) What will be output if the user enters 88? [2]

(c) How many times will the loop be executed if the user enters 88? [1]

(d) What is the name of this algorithm? [1]

2. Sara is writing a program to input her monthly phone bills and output the month name and amount for each month along with the month that had the maximum cost.

 She has defined an array to hold the month names.

 Complete the pseudo-code program. [6]

 // **Program to output maximum month’s phone bill**

 DECLARE MonthName : ARRAY[1:12] OF STRING
MonthName ← ["January", "February", "March", "April", "May", "June", "July", "August", "September", "October", "November", "December"]

 // **Define an array to hold the phone bills for each month**

|  |
| --- |
|  |

3. A two-dimensional array has been defined to hold the quantity of each of five different healthy snack products sold in a shop during the past three months.

 The array is initialised as follows:

 Sales ← [ [0, 0, 0, 0, 0],

 [0, 0, 0, 0, 0],

 [0, 0, 0, 0, 0] ]

 Indexing of the array starts at 1, so the sales of the first product in the second month is held in sales[2][1].

(a) Write a statement to assign the value 13 to the fifth product in the third month. [1]

(b) Complete the algorithm below to calculate and print the total sales for each
product over the three month period in the format: [3]

 Total for product 1: xx

 Total for product 2: xx

 etc.

DECLARE Sales : ARRAY[1:5, 1:3] OF INTEGER
Sales ← [

 [0,0,0,0,0],

 [0,0,0,0,0],

 [0,0,0,0,0]

 ]

TotalSales ← [0,0,0,0,0]

FOR Product ← 1 TO 4

 OUTPUT "Sales for product ", Product

 FOR Month ← 1 TO 3
 OUTPUT "Enter quantity for month ", Month
 INPUT MonthSales

 Sales[Month,Product] ← MonthSales

**#insert code below**

 ENDFOR

ENDFOR

**#insert code on next page**

 [Total 15 marks]