These questions are exam level questions, so don't worry if you can't do them all yet – we still have a year to go!

1 Spot the Error

```
# This algorithm is designed to check whether the user can use an app
#  Checks are made to ensure they have entered a reasonable age!

# Find the 4 errors and fix them

OUTPUT Age
IF Age > 0 THEN
    OUTPUT "Out of range"
ELSE
    IF Age > 128 THEN
        OUTPUT "Out of range"
    ELSE
        IF Age < 13 THEN
            OUTPUT "You are not old enough to use this app"
        ELSE
            IF Age > 13 THEN
                OUTPUT "You can use this app"
            ENDIF
        ENDIF
    ENDIF
```

Error 1:

Correction:

Error 2:

Correction:

Error 3:

Correction:

Error 4:

Correction:

[4]

b) Rewrite the pseudocode in Python using a suitable selection statement.

[4]

2 Spot the Error

```
# PSEUDOCODE
# An algorithm has been written in pseudocode to allow some numbers to be input.
# All the positive numbers are counted up, the negative numbers are ignored
# At the end, the program prints out how many positive numbers were entered.
# An input of 0 (zero) stops the algorithm

# Find the 4 mistakes in the algorithm

Exit <- 0
Count <- 0
WHILE Exit <> 0 DO
  INPUT Number
  IF Number < 0 THEN
    Count <- Count + 1
  ELSE
    IF Number = 0 THEN
        Exit <- 1
    ENDIF
  ENDIF
ENDWHILE
OUTPUT "There were a total of", Number, "positive numbers input"
```

a) Identify the four errors in the pseudocode and suggest a correction for each error.

Error 1:

Correction:

Error 2:

Correction:

Error 3:

Correction:

Error 4:

Correction:

[4]

b) Describe how you could change the corrected algorithm to record and output the TOTAL of all the positive numbers that have been input.

You do NOT need to rewrite the algorithm.

[4]

3 The function `LENGTH(Phrase)` calculates the length of a string `Phrase`

a) Write the pseudocode statements to:

- Store the string “The beginning is the most important part” in `Phrase`
- Calculate and output the length of the string
- Output the string in upper case

[3]

b) Write the output your pseudocode should produce.

[2]

4 Find the four errors in this algorithm written in pseudocode.

```
# This algorithm is designed to search for a product in an array of 50 products and
#  report whether the item is found or not

NumberProducts <- 50        // length of array ProductName[]
OUTPUT "Please enter product to find: "
INPUT Product
Found <- False
Counter <- 1
REPEAT
    IF Product = ProductName[Counter] THEN
        Found <- False
    ELSE
        Counter <- Counter + 1
    ENDIF
UNTIL Found = True AND Counter > NumberProducts
IF Found THEN
    OUTPUT Product, "found at position", Counter, "in the list."
ELSE
    OUTPUT Name, "not found."
ENDIF
```

Error 1:

Correction:

Error 2:

Correction:

Error 3:

Correction:

Error 4:

Correction:

[4]

5 Exam Practice

a) Write pseudocode to input 12 numbers and store them in an array.

[2]

b) Change your pseudocode to use a different loop structure.

[2]

c) Identify another loop structure you could have used.

[1]

d) Write pseudocode to find the largest, smallest, and the average of the numbers you have stored.

[8]