

- 7 An algorithm has been written in pseudocode to calculate a check digit for a four-digit number. The algorithm then outputs the five-digit number including the check digit. The algorithm stops when -1 is input as the fourth digit.

```

01 Flag ← FALSE
02 REPEAT
03     Total ← 0
04     FOR Counter ← 1 TO 4
05         OUTPUT "Enter a digit ", Counter
06         INPUT Number[Counter]
07         Total ← Total + Number * Counter
08         IF Number[Counter] = 0
09             THEN
10                 Flag ← TRUE
11             ENDIF
12     NEXT Counter
13     IF NOT Flag
14         THEN
15             Number[5] ← MOD(Total, 10)
16             FOR Counter ← 0 TO 5
17                 OUTPUT Number[Counter]
18             NEXT
19         ENDIF
20 UNTIL Flag

```

- (a) Give the line number(s) for the statements showing:

Totalling
 Count-controlled loop
 Post-condition loop

[3]

- (b) Identify the **three** errors in the pseudocode and suggest a correction for each error.

Error 1

Correction

Error 2

Correction

Error 3

Correction

[3]

- (c) The algorithm does **not** check that each input is a single digit. Identify the place in the algorithm where this check should occur. Write pseudocode for this check.

Your pseudocode must make sure that the input is a single digit and checks for -1

Place in algorithm

Pseudocode

.....

[4]