Paper 2 : Algorithms

1 **(a)** The following table contains statements written in pseudocode.

Show what type of programming construct each statement represents.

Put a tick (✓) in the appropriate column for each statement.

Statement	Selection	Repetition (Iteration)	Assignment
`WHILE Count < 20`			
`Count ← Count + 1`			
`IF MyGrade <> 'C' THEN`			
`Mark[Count] ← GetMark(StudentID)`			
`ELSE OUTPUT "Fail"`			
`ENDFOR`			

[6]

(b) **(i)** The following table contains statements written in pseudocode.

Give the most appropriate data type for the variable used in each statement.

Statement	Data type
`MyAverage ← 13.5`	
`ProjectCompleted ← TRUE`	
`Subject ← "Home Economics"`	
`MyMark ← 270`	
`MyGrade ← 'B'`	

[5]

(ii) The following table contains statements written in pseudocode.

Complete the table by evaluating each expression using the values from **part (b)(i)**.

If any expression is invalid, write “ERROR” in the **Evaluates to** column.

For the built-in functions list, refer to the **Appendix** on page 16.

Expression	Evaluates to
`"Air-" & MID(Subject, 7, 3)`	
`INT(MyAverage / 2)`	
`ProjectCompleted AND MyMark > 270`	
`ProjectCompleted OR MyMark > 260`	
`ASC(MyGrade / 3)`	

[5]

2 A company keeps details of its product items in a 1D array, StockData. The array consists of 500 elements of type StockRecord. The record fields of StockRecord are:

Field	**Typical value**
ProductCode	"AGR24-B"
Price	100.75
NumberInStock	20
ExpiryDate	31/12/2025

(a) Write pseudocode to declare the record structure StockRecord.

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..... [5]

(b) Write pseudocode to declare the StockData array.

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..... [3]

(c) Write pseudocode to modify the values to element 10 as follows:

• set the price to 106.99

• increase the number in stock by 20

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..... [3]