

TOPIC 4 REVISION

(a) An algorithm will:

- output **each** integer value between 100 and 200 that ends with the digit 7, for example, 107
- output a final count of the number of values that are output.

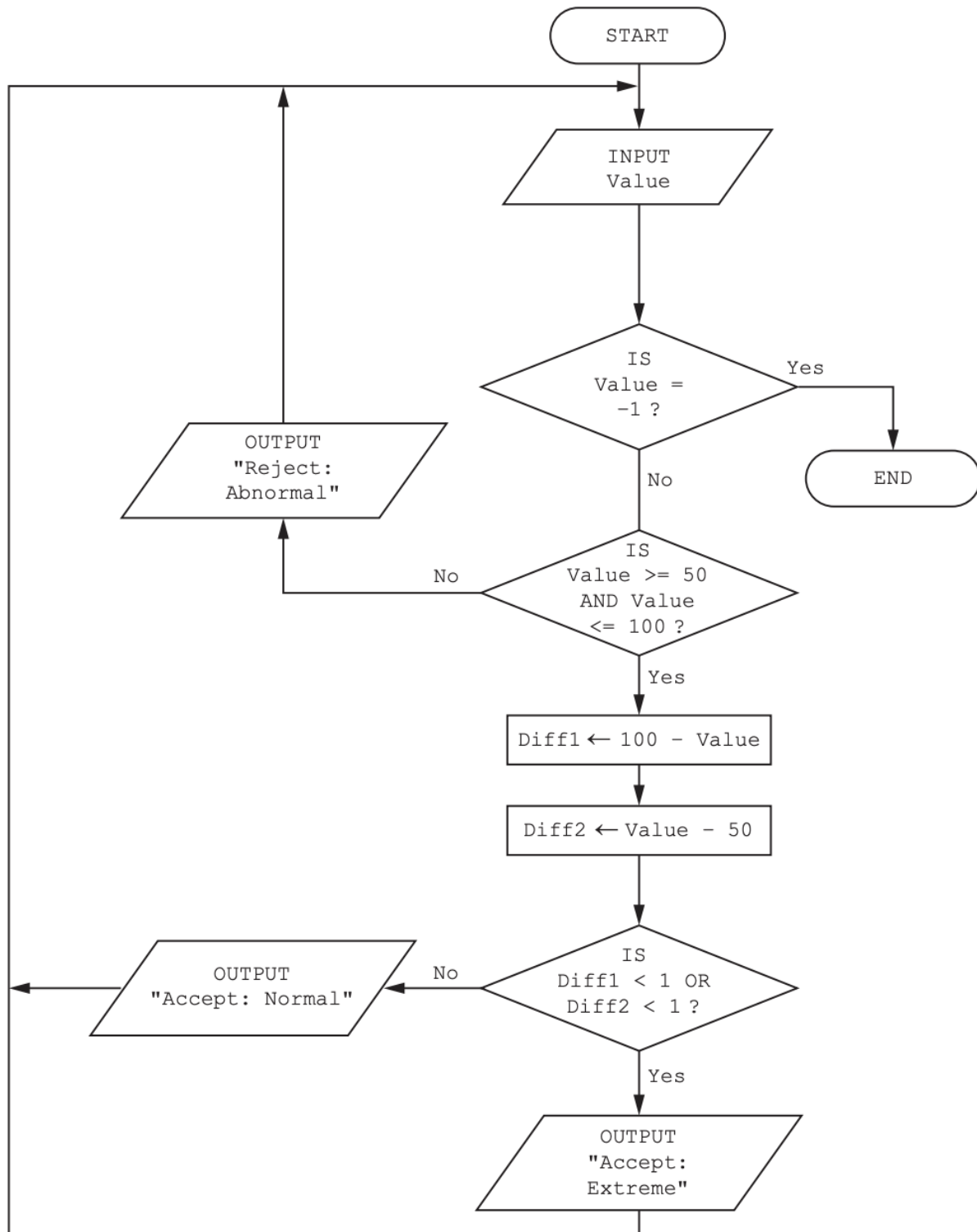
Write pseudocode for this algorithm.

Any variables used must be declared.

[5]

5 The flowchart represents an algorithm.

The algorithm will terminate if -1 is entered.



(a) Complete the trace table for the input data:

50, 75, 99, 28, 82, 150, -1, 672, 80

Value	Diff1	Diff2	OUTPUT

[4]

(b) Describe the purpose of the algorithm.

.....
.....
.....
..... [2]

HL ONLY

- 4 A stack is created using a high-level language. Memory locations 200 to 207 are to be used to store the stack.

The following diagram represents the current state of the stack.

`TopOfStack` points to the last value added to the stack.

Stack		Pointer
Memory location	Value	
200		
201		
202		
203	'F'	← <code>TopOfStack</code>
204	'C'	
205	'D'	
206	'E'	
207	'H'	

- (a) Complete the following table by writing the answers.

Answer	
The value that has been on the stack for the longest time.	
The memory location pointed to by <code>TopOfStack</code> if three POP operations are performed.	

[2]

(b) The following diagram shows the current state of the stack:

Stack		Pointer
Memory location	Value	
200		
201		
202	'W'	← TopOfStack
203	'Y'	
204	'X'	
205	'Z'	
206	'N'	
207	'P'	

The following operations are performed:

```
POP
POP
PUSH 'A'
PUSH 'B'
POP
PUSH 'C'
PUSH 'D'
```

Complete the diagram to show the state of the stack **after** the operations have been performed.

Stack		Pointer
Memory location	Value	
200		
201		
202		
203		
204		
205		
206		
207		