

**Computer science**  
**Higher level**  
**Paper 1**

Friday 3 November 2017 (afternoon)

2 hour 10 minutes

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**Instructions to candidates**

- Do not open this examination paper until instructed to do so.
- Section A: answer all questions.
- Section B: answer all questions.
- The maximum mark for this examination paper is **[100 marks]**.

## Section A

Answer **all** questions.

1. Identify **two** essential features of a computer language. [2]

2. In the context of a networked world, state the role of

(a) a client. [1]

(b) a server. [1]

3. Identify **one** method of inputting data that can improve the accessibility of a computer system for some users. [1]

4. **Copy** and complete the following truth table. [3]

A	B	A NOR B	(A NOR B) OR A
FALSE	FALSE	...	...
...	...	...	...

5. Construct a logic diagram for the Boolean expression

NOT A OR B AND C. [3]

6. Consider the following recursive method, where  $N$  is a positive integer

```
mystery(N)
  if (N > 0) AND (N mod 2 = 0) then
    mystery(N-2)
  end if
  output N
end mystery
```

(a) Determine the output produced by the method call `mystery(5)`. [1]

(b) Determine the output produced by the method call `mystery(4)`. [3]

(c) Construct an iterative algorithm for the method `mystery()`, which uses a single `while` loop instead of recursion. [4]

7. The machine instruction cycle is the process by which a program instruction is fetched, decoded, executed and the results are stored.
- (a) State where all instructions and data are stored. [1]
- (b) Outline the role of the data bus and address bus in this process. [2]
8. Define the term *bit*. [1]
9. Outline what is meant by beta testing. [2]