0478

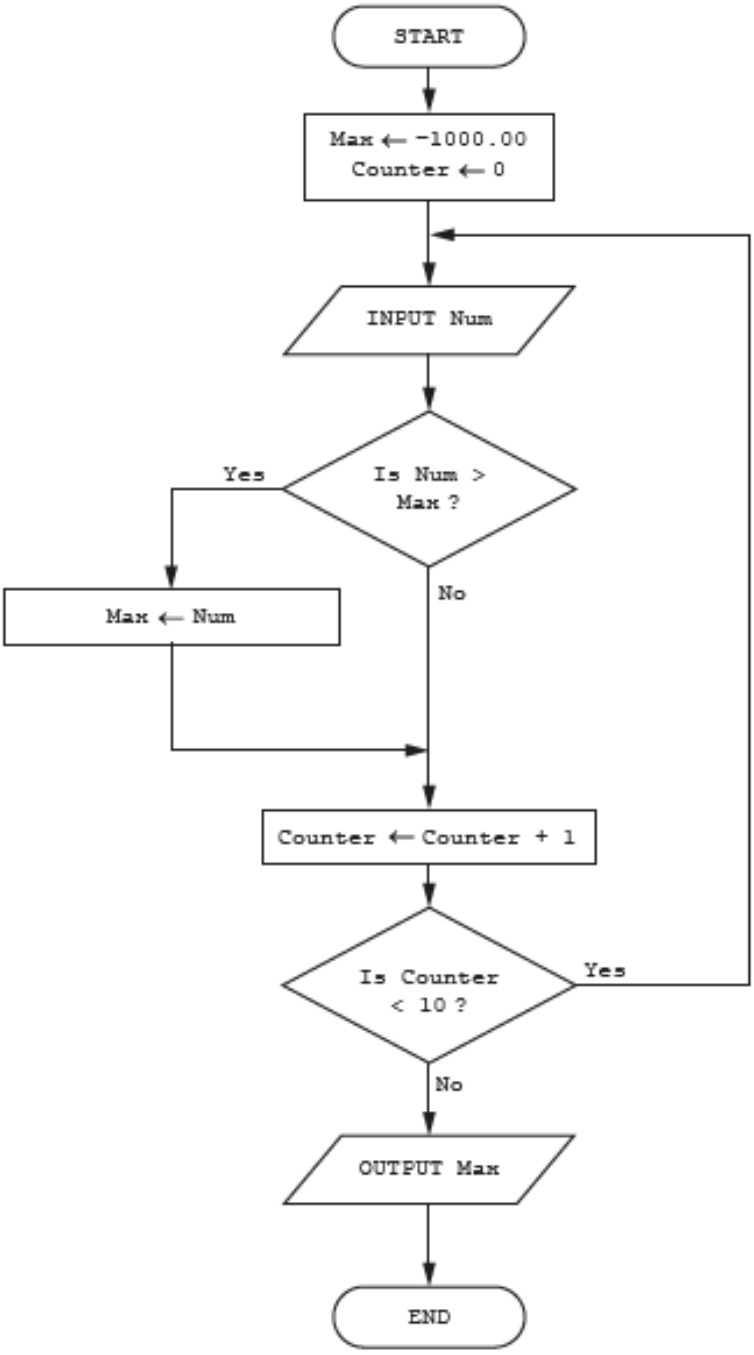
COMPUTER SCIENCE

TOPIC QUESTION PAPER-2 SET- 11

SMART EXAM RESOURCES

Unit 7 Algorithm Design and Problem Solving

1. The flowchart allows a set of 10 numbers to be entered; it finds and outputs the largest of these numbers



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

6.30, 18.62, 50.01, 3.13, 2.05, 50.10, 40.35, 30.69, 0.85, 17.30

Max	Counter	Num	OUTPUT

[3]

(b) Describe **two** different changes you should make to the flowchart to find the smallest number instead of the largest number.

Change 1.....

.....

Change 2.....

.....[2]

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2. Describe, giving a different example for each, the purpose of these validation checks used in programming.

Range check
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Example
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Length check
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Example
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Type check
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Example
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.....[6]

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3. An algorithm is written in pseudocode:

```
Total ← 0
FOR Count ← 1 TO 50
  INPUT Num
  Total ← Total + Num
NEXT Count
OUTPUT Total
```

(a) Describe the purpose of the algorithm.

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.....[3]

(b) Re-write the algorithm in pseudocode using a different type of loop.

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(c) Describe how you could modify the original algorithm shown at the start of question 4, to allow any number of inputs.

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.....[2]

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4.(a) Write an algorithm, using pseudocode, to input three different numbers, multiply the two larger numbers together and output the result**.** Use the variables: Number1, Number2 and Number3for your numbers and Answerfor your result.

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(b) Give **two** sets of test data to use with your algorithm in **part (a)** and explain why you chose each set.

Test data set 1 .....

Reason .....

.....

Test data set 2 .....

Reason .....

.....

[4]

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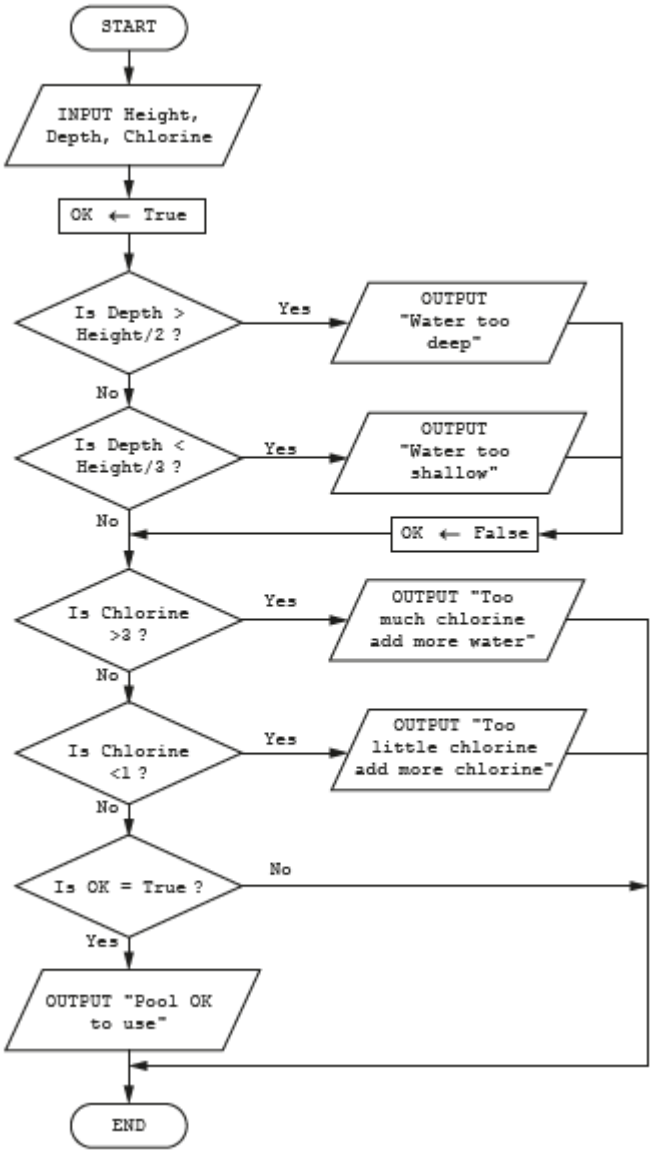
5. The flowchart checks the level of chlorine and the depth of water compared to the height of the swimming pool. Error messages are output if a problem is found



(a) Complete the trace tables for each set of input data.
Input data: **6**, **2.5**, **2**

Height	Depth	Chlorine	OK	OUTPUT

Input data: **4**, **3**, **1.5**

Height	Depth	Chlorine	OK	OUTPUT

Input data: **6**, **3.5**, **4**

Height	Depth	Chlorine	OK	OUTPUT

[6]

(b) Identify a problem with the algorithm that the flowchart represents.

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..... [1]

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6. This is a section of program code.

```
1 Total = 100.00
2 PRINT 'Enter the height of each member of your class, one at a
  time, when prompted'
3 FOR Count = 1 TO 30
4   PRINT 'Enter a height in metres'
5   INPUT Height
6   Total = Total + Height
7   PRINT Total / 30
8   Count = Count + 1
9 NEXT Count
```

(a) There are **three** errors in this code.

State the line numbers that contain the errors and describe how to correct each error.

Error 1 .....

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Error 2 .....

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Error 3 .....

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[3]

(b) State the purpose of this program.

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.....[1]

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