

0478**COMPUTER SCIENCE****TOPIC QUESTION PAPER-2 SET- 13****SMART EXAM RESOURCES****Unit 7 Algorithm Design and Problem Solving**

1. For each of the **four** statements in the table, place a tick in the correct column to show whether it is an example of **validation** or **verification**.

Statements	Validation	Verification
To automatically check the accuracy of a bar code		
To check if the data input is sensible		
To check if the data input matches the data that has been supplied		
To automatically check that all required data fields have been completed		

[4]

2.(a) Describe the purpose of each statement in this algorithm.

```
FOR I ← 1 TO 300
    INPUT Name[I]
NEXT I
```

[2]

(b) Identify, using pseudocode, another loop structure that the algorithm in **part (a)** could have used.

.....[1]

(c) Write an algorithm, using pseudocode, to input a number between 0 and 100 inclusive. The algorithm should prompt for the input and output an error message if the number is outside this range.

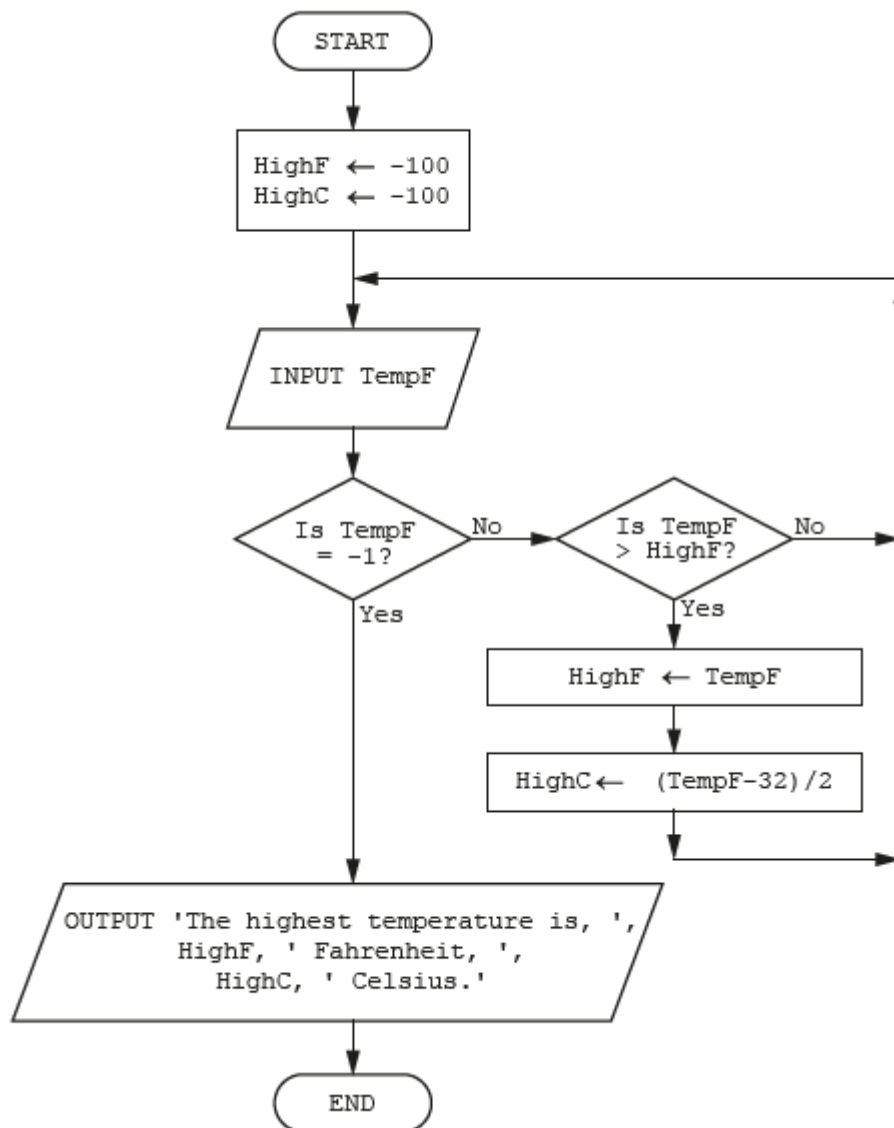
.....[3]

3. This flowchart inputs a range of temperatures in degrees Fahrenheit.

As each temperature is input, it is compared with the previous highest temperature. If it is higher than the current highest, it replaces the previous highest temperature and then it is converted to degrees Celsius.

For ease of calculation, the final step of the Fahrenheit to Celsius conversion has been approximated as division by 2.

When -1 is entered, the input process stops and the highest temperature (in both Fahrenheit and Celsius) is output.



Complete the trace table for the input data:

68, 46, 50, 86, 65, 50, 40, 30, -1

HighF	HighC	TempF	OUTPUT

[5]

4. (a) Write an algorithm to input three different numbers, and then output the largest number. Use either pseudocode or a flowchart.

[4]

(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]

5. This section of program code asks for 80 numbers between 100 and 1000 to be entered. It checks that the numbers are in the correct range, and stores them in an array. It counts how many of the numbers are larger than 500 and then outputs the result when the program is finished.

```

1 Count = 0
2 FOR Index = 1 TO 80
3   INPUT 'Enter a number between 100 and 1000', Number
4   WHILE Number = 99 AND Number = 1001
5     INPUT 'This is incorrect, please try again', Number
6   ENDWHILE
7   Num[80] = Number
8   IF Number > 500 THEN Count = Count + 1
9   UNTIL Index = 80
10  PRINT Index
11 PRINT ' numbers were larger than 500'

```

There are **four** lines of code that contain errors.

State the line number for each error and write the correct code for that line.

Error 1 Line Number

Correct Code

.....

Error 2 Line Number

Correct Code

.....

Error 3 Line Number

Correct Code

.....

Error 4 Line Number

Correct Code

.....[4]

6. (a) Explain the difference between a validation check and a verification check.

.....

.....

.....[2]

(b) Describe, using an example, how data could be verified on data entry.

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.....[2]

(c) Explain what is meant by the term library routine.

.....

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.....[2]