0478

COMPUTER SCIENCE

TOPIC QUESTION PAPER-2 SET- 15

SMART EXAM RESOURCES

Unit 7 Algorithm Design and Problem Solving

1. Four statement types and four examples are shown below.

Draw a line to connect each statement type to the correct example.

Statement type	Example
Assignment	`FOR X < 1 TO 10`
Iteration	`READ X`
Input	`PRINT X`
Output	`X < Y + Z`

[3]

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2. Read this section of program code that inputs 10 positive numbers and then outputs the smallest number input.

```
1   Small = 1000
2   Counter = 0
3   REPEAT
4     INPUT Num
5     IF Num < Small THEN Small = Num
6     Counter = Counter + 1
7   UNTIL Counter = 10
8   PRINT Small
```

(i) Identify **three** changes you would need to make to find the largest number input instead of the smallest number.

1 .....

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2 .....

.....

3 .....

.....[3]

(ii) Rewrite the program code with your changes.

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.....[3]

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3. Read this section of program code that:

- inputs 10 numbers
- checks whether each number is within a specified range
- totals the numbers within the range and outside the range

```
1  InRange = 0
2  OutRange = 1000
3  FOR Count = 1 TO 10
4    INPUT Num
5    IF Num > 10 AND Num < 20 THEN InRange = InRange + 1
6      ELSE OutRange = OutRange - 1
7  Count = Count + 1
8  NEXT X
9  PRINT InRange, OutRange
```

(a) There are four errors in this code.

Locate these errors and suggest a correction to remove each error.

Error 1.....

Correction .....

.....

Error 2.....

Correction .....

.....

Error 3.....

Correction .....

.....

Error 4.....

Correction .....

.....[4]

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(b) Decide, with reasons, whether the numbers 10 and 20 are within or outside the range.

Number	Within range (✓)	Outside range (✓)	Reason
10			…… ……
20			…… ……

[4]

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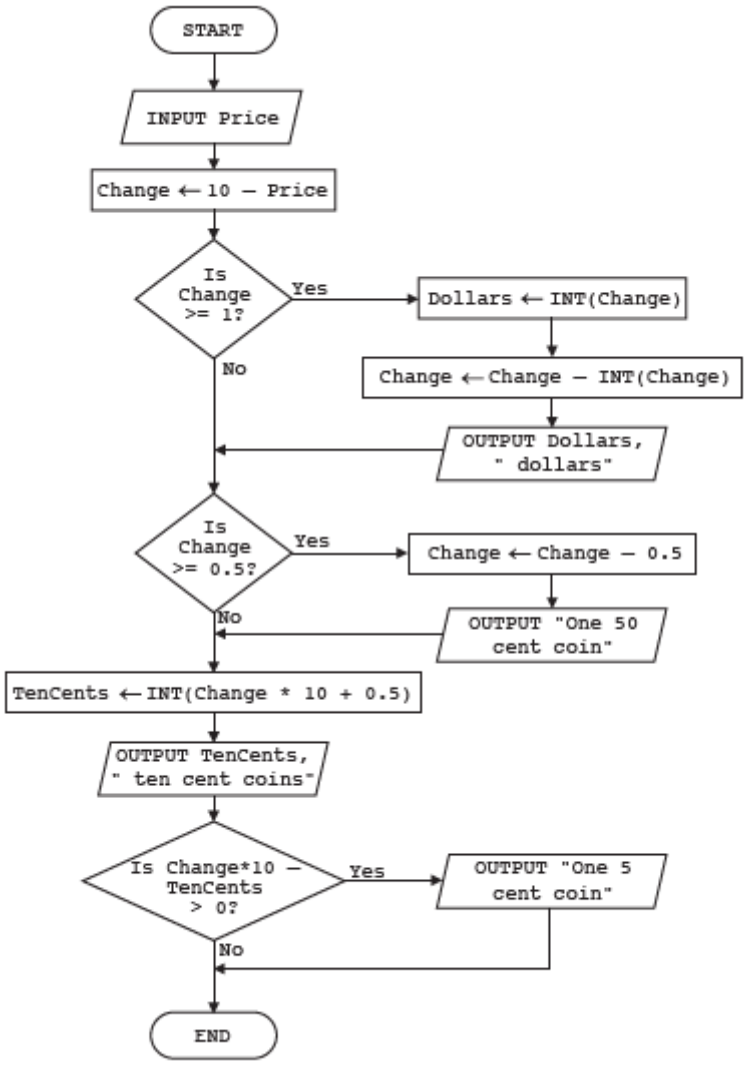
4. The flowchart below inputs the price of an item under $10. The change from a $10 note is output. Any amount less than 5 cents is rounded up to 5 cents.

The predefined function INT rounds a number down to the nearest whole number; for example Z ← INT(5.7) gives the value Z = 5



Complete the trace table for the input data: 6.29

Price	Change	Dollars	TenCents	OUTPUT

[5]

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5. Four validation checks and four descriptions are shown below.

Draw a line to link each validation check to the correct description.

Validation check	Description
Presence check	Numbers between two given values are accepted
Range check	Data is of a particular specified type
Type check	Data contains an exact number of characters
Length check	Ensures that some data have been entered

[3]

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6. Read this section of program code that inputs positive numbers, discards any negative numbers and then outputs the average. An input of zero ends the process.

```
1  Total = 0
2  Counter = 100
3  REPEAT
4    REPEAT
5      INPUT Num
6    UNTIL Num < 0
7    Total = Total + 1
8    Counter = Counter + Num
9  UNTIL Num = 0
10 Average = Total / (Counter - 1)
11 Print Average
```

There are four errors in this code.

Locate these errors and suggest a correction to remove each error.

Error 1

.....

Correction

.....

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Error 2

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Correction

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Error 3

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Correction

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Error 4

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Correction

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.....[8]

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