

## Paper 1 Sample Questions

1 Outline the role of the memory data register in the machine execution cycle.

*Think about the command term 'outline' - eg think about what a computer network is and then give an example of why it exists/is necessary/is useful etc.*

[2]

2 Identify two characteristics of a data packet.

*Think about the command term 'identify' does not require you to expand on your answer(s).*

[2]

3 Construct a logic diagram for the following Boolean expression.

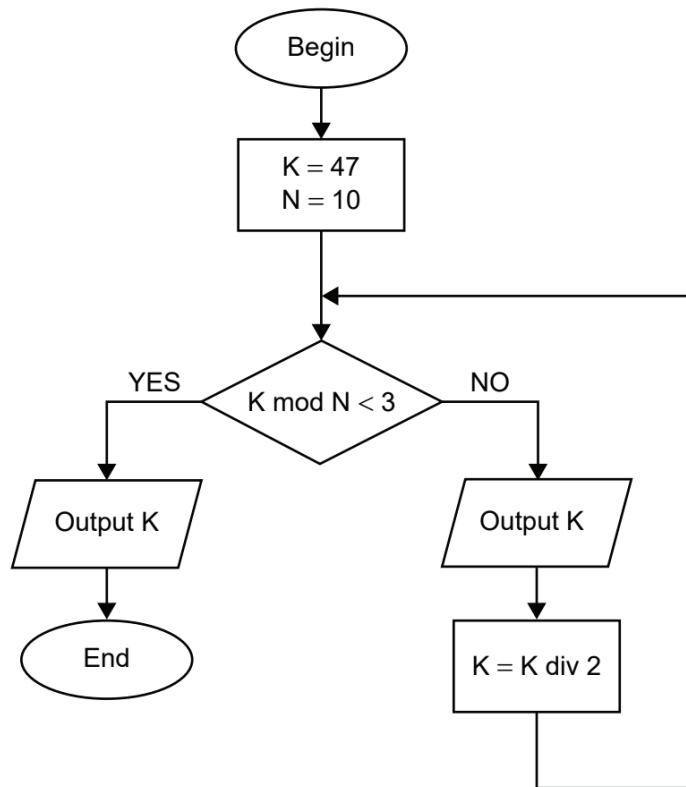
*A logic circuit/diagram is not the same as a truth table!  
Use CIRCLES for the gates, not standard symbols.*

(A NOR B) AND C

[3]

4

Determine the outputs that will be produced by this algorithm.



Note:  $13 \text{div} 10 = 1$ ,  $13 \text{mod} 10 = 3$ ,  $13 \text{mod} 10 < 3$  is FALSE

[3]

5

A company currently uses a LAN to allow staff to share files and access resources. It is thinking about introducing a W-LAN. This will introduce additional security issues. Discuss one of these issues and a way in which the company might resolve it.

Think carefully how to get 3 points for your answer:

- identify an issue
- state a way that the issue can be resolved
- expand on it

[2]

6

The collection DATA contains the following data:

2, 4, 1, -2, -4, 1, 0

Consider the following pseudocode:

```
COUNTER = 0
SUM = 0

DATA.resetNext() //start at the first item in the collection

loop for X from 0 to 6
    if DATA.getNext() > 0
        ARRAY[X] = DATA.getNext()
        COUNTER = COUNTER + 1
        SUM = SUM + ARRAY[X]
    end if
end loop

output SUM/COUNTER
```

Trace the pseudocode using the table below:

| X | ARRAY [X] | COUNTER | SUM | output |
|---|-----------|---------|-----|--------|
|   |           |         |     |        |

A transport authority is investigating how many people use a certain direct train route, which is used every day of the week.

At the end of each day, the total number of passengers who travelled on this route is stored in an array, `PASSENGERS`.

The first item was written to the array on Monday 1st January 2018.

```
[212, 0, 0, 0, 0, 0, 0]
```

On Tuesday and Wednesday, more data was added:

```
[212, 256, 234, 0, 0, 0, 0]
```

By Sunday, all of the data had been added.

Using `PASSENGERS`, construct pseudocode to output **the day of the week** with the highest number of passengers. Use the sub routine `convert()` which converts the numbers 0 to 6 into days of the week, for example `convert(1)` will return "Tuesday".