

8 One ethical consideration for a student connecting their personal computer to the school network is the risk of spreading malware on the network.

(a) Viruses and pharming are examples of malware.

Explain what is meant by a virus and pharming.

Virus
.....
.....

Pharming
.....
.....

[2]

(b) Give **three** other ethical considerations for a student using their personal computer to connect to the school network.

1
.....

2
.....

3
.....

[3]

(c) Describe **two** social impacts of students using Artificial Intelligence (AI) to complete their homework.

1
.....
.....

2
.....
.....

1 Draw **one** line from each verification method to indicate whether it is used during data transfer or data entry.

Verification Method	Use
Parity byte check	
Checksum	Data transfer
Visual check	
Parity block check	Data entry

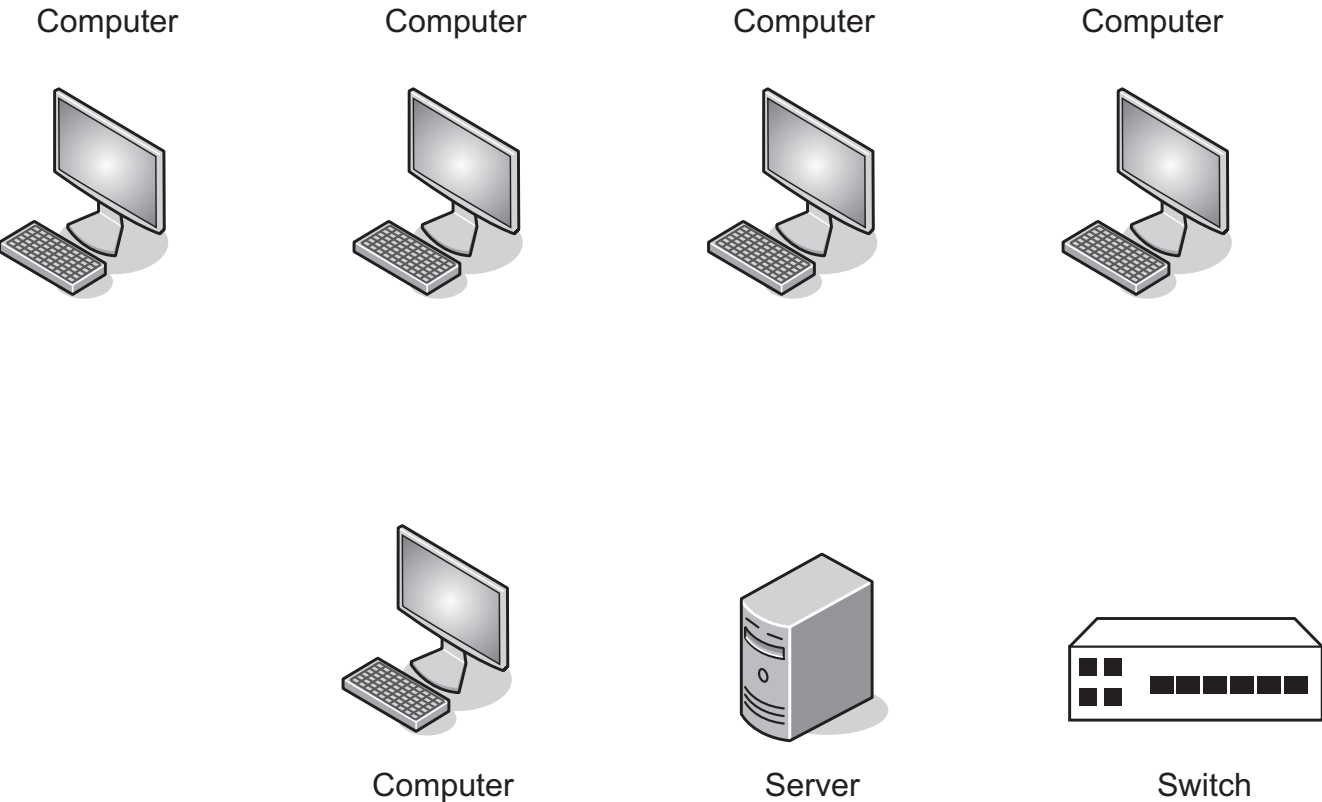
[2]

5 A local area network (LAN) has five computers, one switch and one server.

(a) Describe the characteristics of a LAN.

[2]

(b) Complete the following diagram to show how these devices are connected in a star topology.



[2]

(c) Describe how packets are transmitted between two hosts using a star topology.

[3]

(d) Another type of network is a bus network.

Ethernet is used to transmit and receive data between the devices on the bus network.

Describe how collisions are detected and managed on this network.

[3]

(e) Complete the table by identifying **one** threat to computer and data security posed by networks and the internet.

Describe the threat and give a method of prevention.

Threat	Description	Prevention

[3]

6 Students are learning about a simple check digit method for data validation. In this method, a single check digit is appended to the end of an original number to give a new number.

The students are studying a method which:

- calculates the sum of all the digits in the original number
- uses integer division to calculate the remainder when the sum is divided by 10
- uses the remainder as the check digit
- appends the check digit to the original number, creating the new number.

For example:

original number	4162
sum of all digits	$4 + 1 + 6 + 2 = 13$
remainder when the sum is divided by 10 using integer division	3
new number	41623

The original number is always at least three digits in length.

When the new number is input, the check digit is used to validate the new number.

(a) A function `Generate()` is written to take an original number as a parameter and to return the check digit.

Outline a test plan that could be used to fully test function `Generate()`

Assume that the parameter is valid.

[2]

- (b)** A function `CheckNumber()` will take an integer value and return the Boolean value `TRUE` if the check digit is correct, otherwise return `FALSE`

Write pseudocode for the function `CheckNumber()`

Assume that the parameter is valid.

[illegible]