2 Communication and internet technologies

1 Name the type and method of data transmission being described below:

a Data transmitted in one direction only; one bit at a time over a single channel or wire. [*2 marks*]

.....

b Several bits of data transmitted in both directions at the same time over several channels or wires. [*2 marks*]

.....

c Data transmitted in both directions, but not at the same time, along a single channel or wire. [*2 marks*]

.....

2 a Describe how it is possible to ensure data arrives correctly identified at its destination when using asynchronous data transmission. [*2 marks*]

.....

.....

.....

.....

.....

b Describe how it is possible to ensure that data is received in the correct groups when using synchronous data transmission. [*3 marks*]

.....

.....

.....

.....

c Give **one** advantage and **one** disadvantage of using synchronous data transmission. [*2 marks*]

Advantage: .....

Disadvantage: .....

3 a Give the meaning of the term **USB**. [*1 mark*]

.....

.....

b Indicate with a tick (✓) which of the following statements about USB connections are true: [*5 marks*]

Statement about USB connections	True (✓)
All the wires in a USB connector are used in data transmission	
The maximum cable length in a USB connection is 2 metres	
Devices plugged into the computer using the USB connection are automatically detected	
The USB connection has become the industry standard for most computers	
The user will always be prompted to download a device driver when the device is plugged in to the computer	

c Give **two** examples of devices which can be connected to a computer using a USB connection. [*2 marks*]

1 .....

2 .....

4 a A system uses **even parity**. Indicate which of the following bytes has even parity: [*3 marks*]

i

1	1	0	0	0	0	1	1

.....

ii

1	0	1	1	0	1	1	0

.....

iii

0	0	0	1	1	1	1	1

.....

b Explain why parity checks are used. [*1 mark*]

.....

.....

c Nine bytes of data were transmitted from one computer to another computer. **Even parity** was used by both systems. An additional byte, called the parity byte was also sent at the end of the transmission.

The following table shows the nine bytes and parity byte following transmission:

	parity bit	bit 2	bit 3	bit 4	bit 5	bit 6	bit 7	bit 8
byte 1	1	1	1	0	1	1	1	0
byte 2	1	0	0	0	0	1	0	0
byte 3	0	1	1	1	0	0	1	0
byte 4	0	1	1	1	1	0	1	1
byte 5	1	1	0	0	0	1	1	0
byte 6	0	1	1	0	1	1	0	1
byte 7	1	0	0	1	0	0	0	0
byte 8	0	1	1	1	1	1	0	1
byte 9	0	0	0	0	1	0	0	1
parity byte:	0	0	1	1	1	1	0	0

i One of the bits has been transmitted incorrectly. Indicate which bit is incorrect by giving its bit number and byte number: *[2 marks]*

bit number: .....

byte number: .....

ii Explain how you arrived at your answer to part **ci**. *[3 marks]*

.....

.....

.....

.....

.....

.....

iii Write down the corrected byte: *[1 mark]*

.....

iv Describe a situation where a parity check would not identify which bit had been transmitted incorrectly. *[2 marks]*

.....

.....

.....

.....

v Name and briefly describe another method to check if data has been transmitted correctly. [2 marks]

.....

.....

.....

.....

5 Which internet terms are being described below? [5 marks]

Companies that provide the user with access to the internet; a monthly fee is usually charged for this service	
A unique address that identifies the location of a device which is connected to the internet	
A unique address that identifies the device that is connected to the internet	
A set of rules that must be obeyed when transferring files across the internet	
Software that allows a user to display a web page on their computer screen; they translate the HTML from the website	

6 a HTML is made up of **structure** and **presentation**. Explain the difference between these two terms. [3 marks]

Structure: .....

.....

.....

.....

.....

Presentation: .....

.....

.....

.....

b Indicate how you would know whether or not a website was secure. [1 mark]

.....

.....