

**AQA Computer Science A-Level**  
**4.9.1 Communication**  
Past Paper Questions

## January 2010 Comp 2

8 Computers connected to the Internet use the TCP/IP suite of protocols for data transmission.

8 (a) What is a protocol?

.....  
.....

(1 mark)

## January 2011 Comp 2

10 (b) What is a protocol?

.....

(1 mark)

## June 2011 Comp 3

10 A home desktop computer is connected to a number of peripherals including a printer and a keyboard. It is also connected to the Internet and to a wired Local Area Network (LAN).

10 (a) The keyboard is connected to the computer using a serial connection at a speed of 9,600 bits per second with a baud rate of 9,600 baud.

Explain what is meant by *baud rate*.

.....  
.....

(1 mark)

10 (b) A printer is connected to the same computer using a faster serial connection at a speed of 128,000 bits per second and a baud rate of 64,000 baud.

10 (b) (i) Explain how it is possible for the number of bits transmitted per second to be higher than the baud rate.

.....  
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(1 mark)

# June 2012 Comp 3

**4** A particular long-distance data transmission system transmits data signals as electrical voltages using copper wire.

**4 (a)** What is the relationship between the bandwidth of the copper wire and the bit rate at which the data can be transmitted?

.....  
.....  
..... (1 mark)

**4 (b)** The system is affected by latency.  
What is *latency* in the context of data communications?

.....  
..... (1 mark)

**4 (c)** What, **precisely**, is the relationship between the bit rate and the baud rate for this system?

.....  
..... (1 mark)

## June 2013 Comp 2

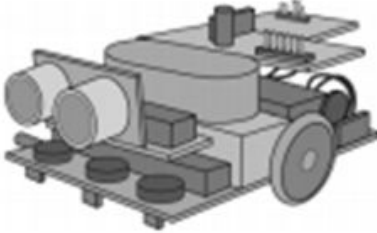
- 4 A school robotics club has recently purchased a robotics kit after the teacher in charge saw an advert in a magazine. The advert is reproduced below.

### RoboEddy - a new educational robot

**Specification**

**Hardware**  
500 Mhz processor  
32 MB RAM  
4 timers  
Wi-Fi communications via WLAN 802.11g radio  
Dual H-bridge motor driver

**Software**  
Built in interpreter for the high level language RobotC  
Directly run assembly code  
XMODEM protocol for reliable file transfer  
Support for various analogue and digital sensors



**Available  
NOW!**

**Only £199**

- 4 (a) Using the XMODEM protocol, students at the robotics club can copy a RobotC program prepared on a desktop computer to the robot.

What is meant by the term *protocol*?

.....

.....

(1 mark)

## June 2017 AS Paper 2

**0 8**

Devices can communicate using either parallel or serial transmission.

Parallel transmission sends many bits at the same time whilst serial transmission only sends one bit at a time.

**0 8 . 1**

Describe **two** reasons why serial transmission might be preferred to parallel transmission.

**[4 marks]**

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**0 8 . 2**

In the context of networking, define the following terms.

**[2 marks]**

Bit rate: \_\_\_\_\_

\_\_\_\_\_

Latency: \_\_\_\_\_

\_\_\_\_\_

## June 2017 Paper 2

0 3

In a particular communications system, eight different voltage levels are used to encode the value of groups of bits. Each voltage level encodes the value of one group of bits.

0 3 . 1

Given that eight different voltage levels are used, how many bits can be in a group that is encoded by a voltage level?

[1 mark]

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0 3 . 2

The baud rate for this system is 500 baud.

What is the system's bit rate?

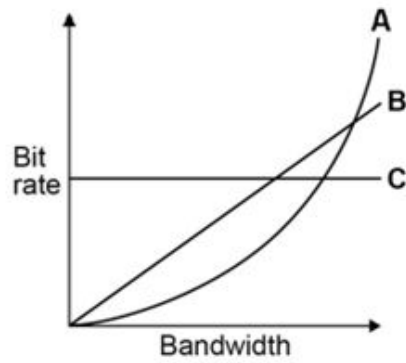
[1 mark]

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Figure 3 shows three suggested relationships between bandwidth and bit rate.

Figure 3



0 3 . 3

Shade **one** lozenge to indicate which of the lines, **A**, **B** or **C** in **Figure 3**, shows the correct relationship between bandwidth and bit rate.

[1 mark]

**A**    **B**    **C**

The system sends the data over a long distance using serial communication.

0 3 . 4

Explain why serial communication is more appropriate in this instance than parallel communication.

[2 marks]

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## June 2013 Comp 3

3 Data is being transmitted along a serial link using asynchronous data transmission and odd parity.

3 (a) Explain what *serial data transmission* is and how it differs from *parallel data transmission*.

.....

.....

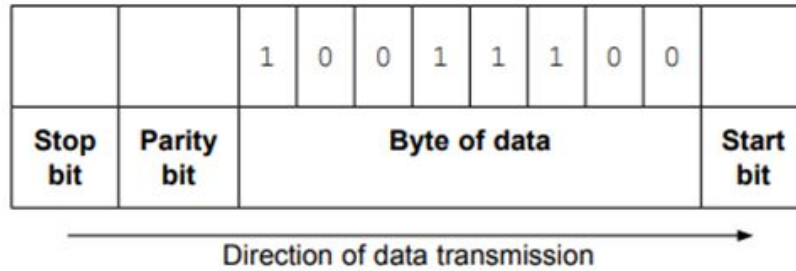
.....

(2 marks)

3 (b) Figure 4 shows a byte of data being transmitted along the serial link using odd parity.

Write the missing values of the **Stop bit**, **Parity bit** and **Start bit** on **Figure 4**.

**Figure 4**



(2 marks)

3 (c) Explain what *asynchronous data transmission* is.

.....

.....

.....

.....

(1 mark)



## Specimen AS Paper 2

0 4 . 3

Explain why browsing the Internet might be slower at a public hotspot in a coffee shop than at home on a wireless network.

**[2 marks]**

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## Specimen Paper 2

0 2

The internal buses in a computer use parallel communication while most peripherals communicate with a computer using serial communication.

0 2 . 1

Explain the differences between the ways in which parallel and serial communication is carried out.

**[2 marks]**

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Most peripherals, such as printers and keyboards, communicate with a computer using a serial connection.

0 2 . 2

Apart from the widespread availability of USB (Universal Serial Bus) ports, explain why peripherals usually use a serial communication method such as USB instead of parallel communication.

**[1 mark]**

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In communications systems, a distinction is made between the bit rate and the baud rate.

0 2 . 3

Define the term baud rate.

[1 mark]

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0 2 . 4

Explain how it is possible for the bit rate to be higher than the baud rate.

[1 mark]

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