Chhetri Academy

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GCSE COMPUTER SCIENCE

4.1

Edexcel 1CP2 | Specification point 4.1.4

How the characteristics of wired and wireless connectivity impact on performance (speed, range, latency,...

Untiered

Past paper question booklet

2	2018-2019	Untiered
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

3 An organisation that supplies audiobooks over the internet is moving into a new office building.

(a) One reason for networking devices is to provide access to the internet.

(i) Give **two** other reasons for connecting devices to networks.

(2)

1 .....

.....

2 .....

.....

(ii) The organisation has chosen wireless connectivity over wired connectivity for its new office building. There is no significant difference in the cost of installing either.

Give **three** reasons why the organisation might prefer wireless connectivity.

(3)

1 .....

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2 .....

.....

3 .....

.....

(b) Each audiobook is compressed before it is released.

(i) A lossy compression algorithm reduces the size of a file by removing data.

Explain why data loss is acceptable when using lossy compression.

(2)

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(ii) A run-length encoding (RLE) algorithm reduces the size of a file based on runs of repeated items. For example, wwwbbbwwbbbbbbwwww would be reduced to 3w3b2w6b4w.

Explain why RLE may **NOT** be a good choice for encoding a text file.

(2)

(c) The organisation calculates how long it takes to transmit the audiobook over the internet.

1 Mbps = 1000^2 bps

1 MB = 1024^2 bytes

The network transmission speed is 54 Mbps.

An audiobook file is 81 MB in size.

Construct an expression to show how many seconds it will take to transmit the audiobook file. Show your unit conversions. You do not have to do the calculations.

(5)

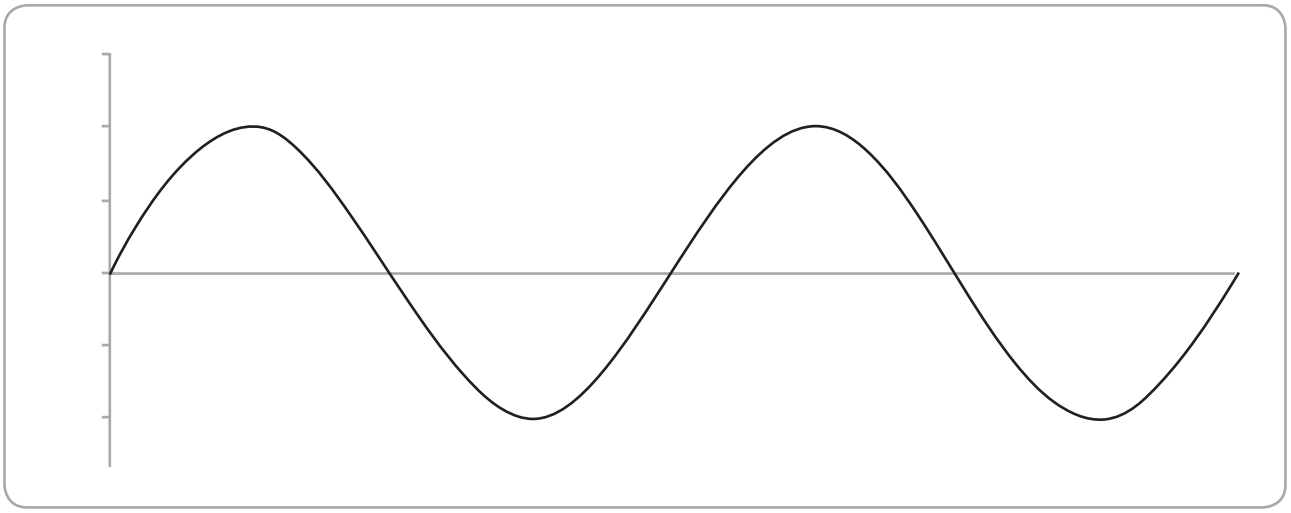
(Total for Question 3 = 14 marks)

4 A baby monitor uses a microphone to record sound.

(a) An analogue to digital converter is used to change the sounds received by the microphone into a form that can be processed by a computer.

(i) Complete the diagram to show sampling frequency and label both axes.

(3)



(ii) State the advantage of using a bit depth of 16 rather than a bit depth of 8.

(1)

(b) Identify the hardware component that holds a program that is currently being executed.

(1)

- ☒ **A** ALU
- ☒ **B** RAM
- ☒ **C** Hard drive
- ☒ **D** Control unit

(c) Construct an expression to show how many seconds it will take to transmit 20 MB of data using a network transmission speed of 2 Mbps

1 KB = 1024 bytes.

You do not have to do the calculation.

(4)

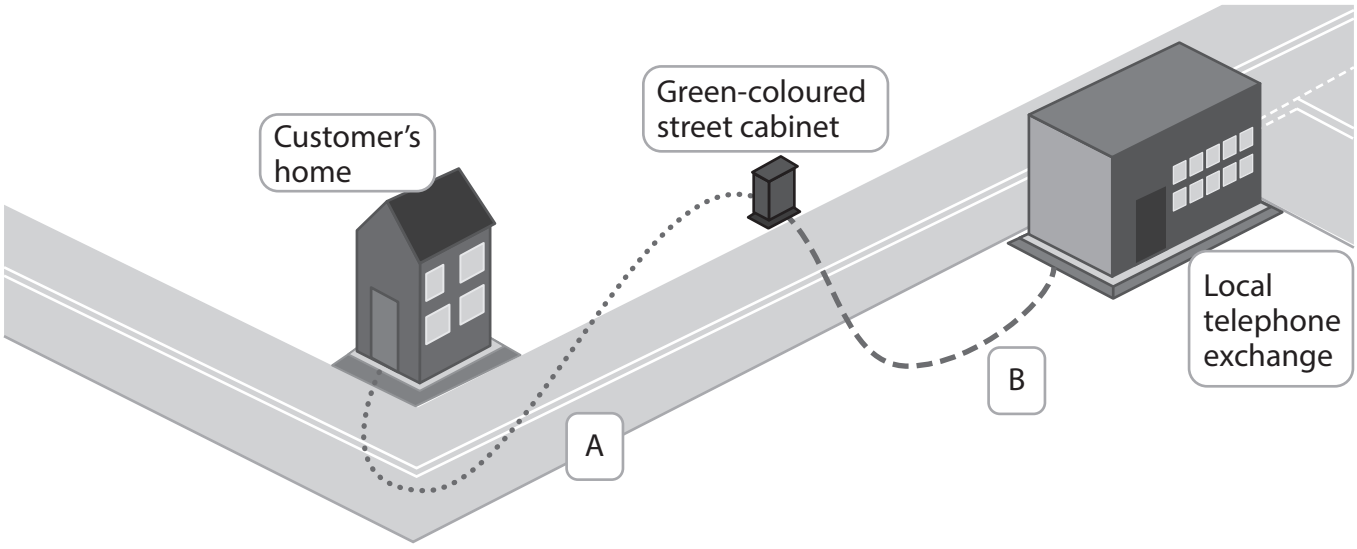
(d) Describe how an embedded system within a baby monitor can be used to alert parents about changes in room temperature.

(3)

(e) The diagram shows two **different** types of connectivity media.

State the different types of connectivity media used at A and B.

(2)



A .....

B .....

(Total for Question 4 = 14 marks)