



DULWICH COLLEGE | SINGAPORE |

Year 9 Mock (I)GCSE Examination Computer Science – Paper 1

MAY 2021

Name:

Teacher:

Teaching Group:

Time allowed: 45 minutes

Instructions: Answer ALL questions in the spaces provided.

Equipment:

Total Marks available	/ 47	Teacher comment:
	%	
(I)GCSE Grade		

Student reflection –

Time finished the exam (If you finish early note down when you finished) -

1 The Binary numbering system is used by computer systems to represent data and information.

A Describe the difference between the Binary and Hexadecimal numbering systems [2]

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.....
.....

B Give the hexadecimal value of the binary number shown [1]

1	1	0	1	1	0	0	1	1	0	1	1
---	---	---	---	---	---	---	---	---	---	---	---

.....

C State **ONE** advantage of using hexadecimal in computer science [1]

.....
.....

D Assuming a 16 bit register size. Give the binary value of the hexadecimal number shown F E 1 0 [1]

.....

E State the highest DENARY number that can be represented by 10 bits. [1]

10 bit.....

F Give the denary value of the hexadecimal number shown 3 5 [1]

.....

H Give the denary value of the binary number shown [2]

1	0	1	1	1	0	1	0	0	1	1	0
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I A binary number stored in a register can have many different uses, such as an address in main memory. Give **one** other use for a binary number stored in a register

..... [1]
.....

J Complete the table below [4]

Memory Size		Number of bits
Nibble		
Kibibyte		
10 Bytes		
1 Byte		

K Complete the table by numbering the file sizes from smallest to largest [6]

File Size	Rank (1 smallest, 6 largest)
1 EiB	
47 KiB	
1040 KiB	
1 MiB	
5 TiB	
3 PiB	

2 A cloud storage platform is used to back up the GPS location of endangered species in Kenya National Wildlife park.

The GPS location is sent from a responder on various wildlife.
Each piece of data is 8 bits in size. Data collection occurs twice per minute.

Calculate the number of kibibytes that would be needed to store the data collected for 10 hours. [3]

Show your working.

A

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B As the data is uploaded to the cloud, it is compressed. Explain what is meant by 'lossy compression' [2]

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C Explain **two** advantages of compression for the user of compressing their data before uploading [2]

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3 A A student is studying sound. complete the paragraph below using the following words.

- Continuous
- Discrete
- wave
- Digital
- Resolution
- Analogue
- Binary
- Samples
- Rate

[7]

Sound is a _____ wave of _____ data. It is sampled by an _____ to digital converter incredibly quickly and converted to _____ data which is discrete.

The number of _____ is determined by the sample _____. The sample _____ is the number of bits used to record each sample.

B Explain how file size and accuracy of the recording would be impacted by increasing the sample rate [2]

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C A 10 second audio clip is recorded using stereo sound at 44.1 kHz. The sample resolution is 16 bits. [3]

Calculate the file size requirements in kibibytes for this clip.
Show your working.

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- ii A colour graphic that measures 100 by 200 pixels is stored. It uses 8-bit colour. It has 485 bytes of metadata. [3]

Calculate the file size requirements of this image in bytes.

Show your working

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5. Interpreters and Compilers are two types of translators

Complete the following table to indicate Interpreter or Compiler for each statement [5]

Statement	Interpreter	Compiler
Translates the entire program in one go		
Generates an error report at the end of translation of the entire program		
Slow speed of execution of program loops		
Takes one statement at a time and executes it		
Stops the translation as soon as the first error is encountered		