

Data representation – 2021 O Level 22101. **Nov/2021//Paper_12/No.1**

(a) Denary is a number system that is used by programmers.

Tick (✓) **one** box to show whether denary is a base-2, base-10 or base-16 number system.Tick
(✓)

Base-2

Base-10

Base-16

[1]

(b) Hexadecimal values can be used to represent denary values.

Convert these **four** hexadecimal values into denary values.

05

20

1A

AB

[4]

Working space

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(c) Hexadecimal values can also be converted to binary values.

Tick (✓) **one** box to show the correct 8-bit binary value for each hexadecimal value.

(i) Hexadecimal value 25

Tick
(✓)

00011001

00100101

10100001

[1]

(ii) Hexadecimal value 1B

Tick
(✓)

00011011

10110001

00011010

[1]

(d) (i) Give **one** way that hexadecimal is used in website development.

..... [1]

(ii) Give **one** way that hexadecimal is used in low-level programming.

..... [1]

2. Nov/2021//Paper_12/No.5b

Sammi works for a finance company and has a laptop that he uses for his work. He has confidential data about his customers stored on his laptop.

Sammi does **not** connect the laptop to any networks.

(a) Sammi is concerned about his customers' confidential data being viewed by other people in his office.

One method he uses to prevent others viewing the data is encryption.

Identify **three** other methods Sammi could use to prevent his customers' confidential data being viewed.

- 1
- 2
- 3 [3]

(b) Sammi creates videos for the finance company website that give customers advice about their finances.

He uses lossy compression to reduce the file size of the videos for the website.

(i) Give **three** ways that lossy compression can reduce the file size of the videos.

- 1
- 2
- 3 [3]

(ii) Give **one** drawback of using lossy compression to reduce the file size of the videos.

-
- [1]

3. June/2021//Paper_11/No.1a

Benedict has a computer that is assigned an Internet Protocol (IP) address. The IP address is:

198.167.214.0

The IP address is represented as denary values.

(a) Convert the denary values 167 and 214 from the IP address to 8-bit binary.

167							
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214							
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Working space

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[2]

4. June/2021//Paper_11/No.7a

A music company has a website that allows users to stream music. The music is stored in sound files.

(a) The sound files are compressed using lossless compression.

(i) Describe how the sound files are compressed using lossless compression.

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..... [4]

(ii) State **one** reason why the music company would compress the sound files using lossless, rather than lossy, compression.

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..... [1]

(iii) Give **one** benefit, to the user, of the music company compressing the sound files.

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..... [1]

(iv) Give **one** drawback of the music company using lossless, rather than lossy, compression for the sound files.

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..... [2]

5. June/2021//Paper_12No.1a,b,c

A denary value can be converted into hexadecimal and binary.

(a) Complete the table to show the hexadecimal and 8-bit binary values of the given denary values.

Denary	Hexadecimal	8-bit binary
49		
123		
200		

[6]

Working space

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(b) Give **two** benefits, to users, of converting binary values to hexadecimal.

Benefit 1

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Benefit 2

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[2]

(c) Hexadecimal is used to represent Hypertext Markup Language (HTML) colour codes in computer science.

Identify **three** other ways that hexadecimal is used in computer science.

1

2

3

[3]