ctive learner, who recognises areas for development and is committed to personal improvement. An organised learner who always completes class work and homework to a very high standard.

Question **1**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(0,255,255)

Select one:

- a. White
- b. Grey
- c. Black
- d. Green
- e. Magenta
- f. Yellow
- g. Red
- h. Blue
- i. Cyan ✔

The correct answer is: Cyan

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 12:46	Saved: Cyan	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **2**

Correct

Mark 1.00 out of 1.00

Which of these applications would best utilize vector graphics?

a. A photographer taking photos of nature.

b. A design that will be engraved on a wide variety of sizes and metals. ✔

c. An artist that wants to store photos of their painting digitally.

d. Storing frames of a short film.

Your answer is correct.

The correct answer is:
A design that will be engraved on a wide variety of sizes and metals.

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 12:47	Saved: A design that will be engraved on a wide variety of sizes and metals.	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **3**

Correct

Mark 1.00 out of 1.00

The RGB value of Magenta maximizes the color red and Maximises ✔ the color blue.

Your answer is correct.

The correct answer is:
The RGB value of Magenta maximizes the color red and [Maximises] the color blue.

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 12:47	Saved: {Maximises}	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **4**

Correct

Mark 3.00 out of 3.00

A DNA sequence is a practical example of when we would use Run-Length Encoding.

Consider the following DNA Sequence:

taaaaaactgtacttttccg

Compute the **compression ratio** when Run-Length Encoding is used to compress the string.

(please leave your answer as a decimal)

Answer: 0.8 ✔

Original string has length 20. The encoded string is t*a6ctgtac*t4ccg, with length 16.

16/20 = 0.8

The correct answer is: 0.8

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 12:53	Saved: 0.8	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**3.00**

Question **5**

Correct

Mark 2.00 out of 2.00

Using the Huffman code table below, decode the string 1000100101111011101.

Huffman Code	Character
00	A
01	E
100	L
110	O
111	R
1010	B
1011	D

Answer: LEADORE ✔

The correct answer is: LEADORE

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 12:58	Saved: LEADORE	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**2.00**

Question **6**

Correct

Mark 1.00 out of 1.00

In temporal compression, delta frames are?

a. The differences stored between sequential data. ✔

b. A waste of space.

c. The basis on which to compare differences.

d. Frames that have their entire image stored.

Your answer is correct.

The correct answer is:
The differences stored between sequential data.

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:01	Saved: The differences stored between sequential data.	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **7**

Correct

Mark 15.00 out of 15.00

Following the example done in lectures, design a Huffman code to code up five Greek characters which occur with the percentages given in brackets:

α (50%), β (5%), γ (30%), δ (5%), ε (10%).

α =

0

✔

β =

1111

✔

γ =

10

✔

δ =

1110

✔

ε =

110

✔

NB. Check that your code has the prefix property.

b) What compression ratio have you achieved on average with your code? (Give your answer in radix point form)

0.6

✔

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:13	Saved: part 1: 0; part 2: 1111; part 3: 10; part 4: 1110; part 5: 110; part 6: 0.6	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**15.00**

Question **8**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(255,255,0)

Select one:

- a. Green
- b. Blue
- c. Cyan
- d. Grey
- e. Yellow ✔
- f. Black
- g. White
- h. Magenta
- i. Red

The correct answer is: Yellow

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:14	Saved: Yellow	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **9**

Correct

Mark 1.00 out of 1.00

Select the most correct option about audio compression:

a. Audio can not be compressed

b. Audio can only be compressed using lossy compression

c. Audio can only be compressed using lossless compression

d. Audio can be compressed using either lossy or lossless compression ✔

Your answer is correct.

The correct answer is:
Audio can be compressed using either lossy or lossless compression

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:15	Saved: Audio can be compressed using either lossy or lossless compression	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **10**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(0,0,255)

Select one:

- a. Yellow
- b. Blue ✔
- c. Red
- d. White
- e. Black
- f. Cyan
- g. Magenta
- h. Grey
- i. Green

The correct answer is: Blue

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:15	Saved: Blue	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **11**

Correct

Mark 1.00 out of 1.00

Select True of False:

When encoding a string with Run-Length encoding, you will always encode a character/sequence of same characters beginning with a flag (eg.*)

Select one:

- True
- False ✔

The correct answer is 'False'.

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:16	Saved: False	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **12**

Correct

Mark 2.00 out of 2.00

What is the minimum number of bits that we require to represent all 35000 enrolled students at Wits University?

Answer: 16 ✔

The correct answer is: 16

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:16	Saved: 16	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**2.00**

Question **13**

Correct

Mark 3.00 out of 3.00

How many bits may be required for encoding the message 'mississippi' using Huffman encoding?

Answer: 21 ✔

The correct answer is: 21

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:25	Saved: 21	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**3.00**

Question **14**

Correct

Mark 3.00 out of 3.00

Consider the data stream: W, S, A, D. Using these a string is set up: WWSAWAWADD. Using their frequencies, setup a Huffman encoding (using 0's and 1's) and encode the original string.

Answer: 0011110010010110110 ✔

The correct answer is: 0011110010010110110

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:34	Saved: 0011110010010110110	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**3.00**

Question **15**

Correct

Mark 3.00 out of 3.00

Data compression is the process of taking a data set and arranging or coding it so that it takes up less memory in the computer.

An important example is the JPEG image compression method.

For example, a picture of 5 megabytes can be quite well represented in, say, 100 kilobytes.

The compression ratio is defined as: (volume required for the compressed data) / (volume required for the original data).

What is the compression ratio of the JPEG example given above?

Answer: 0.02 ✔

The correct answer is: 0.02

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:42	Saved: 1/50	Incomplete answer	
3	25/04/22, 13:42	Saved: 0.02	Answer saved	
4	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**3.00**

Question **16**

Correct

Mark 2.00 out of 2.00

Using the Huffman code table below, find the code for the word 'REDBOLE'.

Huffman Code	Character
00	A
01	E
100	L
110	O
111	R
1010	B
1011	D

Answer: 111011011101011010001

The correct answer is: 111011011101011010001

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:47	Saved: 111011011101011010001	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**2.00**

Question **17**

Correct

Mark 1.00 out of 1.00

Using Huffman Encoding to represent A, B, C, D, all Huffman Code representations will take up less bits than in a simple 2-bit coding?

Select one:

- True
- False ✔

The correct answer is 'False'.

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:53	Saved: False	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **18**

Correct

Mark 1.00 out of 1.00

We can represent infinitely many colors with the RGB system.

Select one:

- True
- False ✔

The correct answer is 'False'.

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:54	Saved: False	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **19**

Correct

Mark 1.00 out of 1.00

Which of the following is an example of analog information?

Select one:

- a. The frequency of a humans voice in air ✔
- b. The result of fipping a coin
- c. Morse code
- d. The result of a rolled dice
- e. Drawing a card from a deck of playing cards

The correct answer is: The frequency of a humans voice in air

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 13:55	Saved: The frequency of a humans voice in air	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

Question **20**

Correct

Mark 2.00 out of 2.00

Given the string **hhhuuuffffffmmmmaaaaaannnn** what would the compression ratio be?

Answer: 0.72 ✔

The correct answer is: 0.72

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 14:00	Saved: 18/25	Incomplete answer	
3	25/04/22, 14:00	Saved: 0.72	Answer saved	
4	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**2.00**

Question **21**

Correct

Mark 3.00 out of 3.00

Let in a file the frequency of letters i, n, d, e, x are 16, 7, 17, 25, 20 respectively. Which of the following is the Huffman's code of the letter 'x'?

Answer: 10 ✔

The correct answer is: 01

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 14:04	Saved: 10	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**3.00**

Question **22**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(255,0,0)

Select one:

- a. Magenta
- b. Yellow
- c. Grey
- d. Cyan
- e. White
- f. Black
- g. Red ✔
- h. Blue
- i. Green

The correct answer is: Red

Response history

Step	Time	Action	State	Marks
1	25/04/22, 12:45	Started	Not yet answered	
2	25/04/22, 14:05	Saved: Red	Answer saved	
3	**25/04/22, 14:08**	**Attempt finished**	**Correct**	**1.00**

◄ Images

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Lesson 1: Gates and Circuits Lecture ►