What is the result of trying to store the value 25⁄8 in a one-byte floating-point system?

A. Accurate representation

B. Truncation error

C. Round-off error

D. Overflow error

Correct Answer: B (Truncation error)

When representing 25⁄8 in binary, what value is lost when copying it into the mantissa field?

A. The integer part

B. The fractional part

C. The leftmost 1⁄8

D. The rightmost 1⁄8

Correct Answer: D (The rightmost 1⁄8)

What does the bit pattern 01101010 represent in the context of the given paragraph?

A. 2½

B. 25⁄8

C. 21⁄2

D. 11⁄8

Correct Answer: C (21⁄2)

What term is used to describe the situation where part of the value being stored is lost due to the mantissa field's size limitation?

A. Truncation error

B. Round-off error

C. Overflow error

D. Precision error

Correct Answer: A (Truncation error)

How can the significance of truncation errors be reduced?

A. By using a longer exponent field

B. By using a longer sign bit

C. By using a longer mantissa field

D. By using a longer radix point

Correct Answer: C (By using a longer mantissa field)

What is the primary drawback of the GIF compression system when applied to arbitrary images?

A. It requires a large palette

B. It produces lossless compression

C. It limits the number of colors to 256

D. It does not work well with text documents

Correct Answer: C (It limits the number of colors to 256)

Which compression technique allows the replacement of sequences of identical data elements with a code indicating the element and the number of times it occurs?

A. Lossless encoding

B. Frequency-dependent encoding

C. Run-length encoding

D. Relative encoding

Correct Answer: C (Run-length encoding)

What term is used for the system in which the length of the bit pattern used to represent a data item is inversely related to the frequency of the item's use?

A. Variable-length coding

B. Fixed-length coding

C. Huffman encoding

D. Run-length encoding

Correct Answer: A (Variable-length coding)

What is the primary advantage of dictionary encoding systems in data compression?

A. Lossy compression

B. Fixed-length codes

C. High precision

D. Elimination of redundancy

Correct Answer: D (Elimination of redundancy)

What is adaptive dictionary encoding, and how does it differ from traditional dictionary encoding?

A. It allows the dictionary to change during the encoding process.

B. It uses fixed-length codes for dictionary entries.

C. It relies on lossy compression techniques.

D. It does not use dictionaries for encoding.

Correct Answer: A (It allows the dictionary to change during the encoding process.)

Which technique reduces the size of chrominance information while preserving brightness information in image compression?

A. DCT (Discrete Cosine Transform)

B. Huffman coding

C. Run-length encoding

D. Temporal masking

Correct Answer: A (DCT - Discrete Cosine Transform)

What is the primary goal of compressing audio and video data?

A. Saving storage space

B. Reducing transmission speeds

C. Maintaining high quality

D. Minimizing truncation errors

Correct Answer: B (Reducing transmission speeds)

What does the term "I-frames" refer to in video compression?

A. Frames with incomplete data

B. Frames with high precision

C. Frames with lossless compression

D. Frames encoded in their entirety

Correct Answer: D (Frames encoded in their entirety)

What is the primary advantage of MP3 audio compression?

A. Lossless compression

B. High precision sound

C. Removal of perceptually irrelevant audio details

D. Loss of audio quality

Correct Answer: C (Removal of perceptually irrelevant audio details)

What are the common units used to measure transmission speeds for audio and video data?

A. Bps, Gbps, and Tbps

B. Kbps, Mbps, and Gbps

C. Mbps, Tbps, and Pbps

D. Kbps, Gbps, and Pbps

Correct Answer: B (Kbps, Mbps, and Gbps)

Which organization developed the MPEG standards for encoding and compressing audio and video?

A. ISO

B. GIF

C. TIFF

D. JPEG

Correct Answer: A (ISO)

What is the acronym "MP3" short for?

A. MPEG layer 3

B. Multimedia Programming 3

C. Motion Picture Experts Group 3

D. Music and Podcast 3

Correct Answer: A (MPEG layer 3)

Which compression technique is known for taking advantage of human perceptual properties to achieve significant compression of audio?

A. DCT (Discrete Cosine Transform)

B. Run-length encoding

C. Temporal masking

D. Frequency masking

Correct Answer: D (Frequency masking)

What is the purpose of averaging chrominance values over two-by-two-pixel squares in image compression?

A. To reduce image resolution

B. To increase image quality

C. To reduce chrominance information

D. To preserve color accuracy

Correct Answer: C (To reduce chrominance information)

What is the primary goal of audio and