

MC questions for Unit 10

Question 1

One factor in the accuracy of a reconstructed PCM signal is the _____.

- ☐ signal bandwidth
- ☐ carrier frequency
- ☒ number of bits used for quantization
- ☐ baud rate

Question 2

Which conversion type needs sampling of a signal

- ☐ digital-to-digital conversion
- ☒ analog-to-digital conversion
- ☐ digital-to-analog conversion
- ☐ all of the above

Question 3

Which of the following belongs to the class of stream-oriented information?

- ☐ text
- ☒ video
- ☐ image
- ☐ all of the above

Question 4

Consider a data source which generates a symbol from the alphabet, {A, B, C}. The probabilities of generating A, B, and C, are 0.5, 0.25 and 0.25, respectively. What is the entropy of this data source?

- ☐ 1
- ☒ 1.5
- ☐ 1.75
- ☐ 2

Question 5

Consider a data source which generates a symbol from the alphabet, {A, B, C}. The probabilities of generating A, B, and C, are 0.5, 0.25 and 0.25, respectively. If Huffman code is used for encoding, what is the average code length in bits?

- ☐ 1
- ☒ 1.5
- ☐ 1.75
- ☐ 2

Question 6

Consider a data source which generates a symbol from the alphabet, {A, B, C}. If A, B and C are encoded as 11, 10 and 011, respectively. Which of the following statement is true?

- ☒ The code is both prefix-free and uniquely decodable.
- ☐ The code is prefix-free but not uniquely decodable.
- ☐ The code is uniquely decodable but not prefix-free.
- ☐ The code is neither prefix-free nor uniquely decodable.

Question 7

Consider a data source which generates a symbol from the alphabet, {A, B, C}. If A, B and C are encoded as 0, 10 and 01, respectively. Which of the following statement is true?

- ☐ The code is both prefix-free and uniquely decodable.
- ☐ The code is prefix-free but not uniquely decodable.
- ☐ The code is uniquely decodable but not prefix-free.
- ☒ The code is neither prefix-free nor uniquely decodable.

Question 8

Consider a data source which generates a symbol from the alphabet, {A, B, C}. If A, B and C are encoded as 0, 01 and 011, respectively. Which of the following statement is true?

- ☐ The code is both prefix-free and uniquely decodable.
- ☐ The code is prefix-free but not uniquely decodable.
- ☒ The code is uniquely decodable but not prefix-free.
- ☐ The code is neither prefix-free nor uniquely decodable.

Question 9

Is it possible to have a uniquely decodable code for a 5-symbol alphabet which has codeword lengths equal to 1, 2, 4, 4, and 5 for the five symbols?

- ☒ Yes
- ☐ No

Question 10

Consider a data source which generates a symbol from the alphabet, {A, B, C}. If A, B and C are encoded as 0, 10 and 11, respectively. Decode the string 1011110010.

☐ BCCAAAB

☒ BCCAAB

☐ BCCAB

☐ BCBCAAB