26 Lecture - CS301

Important Mcqs

- 1. Which of the following is a lossless data compression algorithm?
 - a) Huffman encoding
 - b) Arithmetic encoding
 - c) Run-length encoding
 - d) All of the above

Answer: d) All of the above

- 2. In Huffman encoding, the symbols to be encoded are represented as what?
 - a) A binary tree
 - b) A prefix code
 - c) A suffix code
 - d) None of the above

Answer: a) A binary tree

- 3. What is the goal of Huffman encoding?
 - a) To compress data by representing frequently occurring symbols in a compressed form
 - b) To convert data from analog to digital form
 - c) To encrypt data for secure transmission
 - d) None of the above

Answer: a) To compress data by representing frequently occurring symbols in a compressed form

- 4. How is the Huffman tree built?
 - a) By merging the two most frequent symbols at each step
 - b) By merging the two least frequent symbols at each step
 - c) By randomly selecting symbols to be included
 - d) None of the above

Answer: b) By merging the two least frequent symbols at each step

- 5. Which of the following is NOT a property of the Huffman code?
 - a) Prefix-free
 - b) Uniquely decodable
 - c) Provides a compact representation of the original data
 - d) Lossy compression

Answer: d) Lossy compression

- 6. What is a prefix code in Huffman encoding?
 - a) A code in which no codeword is a prefix of any other codeword
 - b) A code in which each symbol is represented by the same number of bits

- c) A code in which the codewords are sorted in order of frequency
- d) None of the above

Answer: a) A code in which no codeword is a prefix of any other codeword

7. Which of the following is a disadvantage of Huffman encoding?

- a) It requires the entire input to be available at once
- b) It is slow to encode and decode
- c) It cannot be used with binary data
- d) None of the above

Answer: a) It requires the entire input to be available at once

- 8. What is the time complexity of building a Huffman tree?
 - a) O(n)
 - b) O(n log n)
 - c) O(n^2)
 - d) None of the above

Answer: b) O(n log n)

- 9. What is the space complexity of building a Huffman tree?
 - a) O(n)
 - b) O(log n)
 - c) O(n log n)
 - d) None of the above

Answer: a) O(n)

- 10. Which of the following is an application of Huffman encoding?
 - a) Lossy audio compression
 - b) Lossless image compression
 - c) Data encryption
 - d) None of the above

Answer: b) Lossless image compression