# Question 1:

**If N is the size of the text, and M is the size of the pattern, then what is the time complexity of KMP?**

#### Select the correct choice:

O(M + N), which is linear

O(M x N), because we're comparing every character in string with every character in pattern

O(M ^ N), because it is highly inefficient algorithm

O(M)

O(N)

O(M + N), and it cannot be called linear

# Answer 1:

O(M + N) which is linear.

# Question 2:

**If N is the size of the text, and M is the size of the pattern, then what is the time complexity of KMP, if we were to find ALL occurrences of the pattern?**

#### Select the correct choice:

O(M x N), because we need to find all occurrences

O(M + N), because the problem if finding all occurrences is the same as the problem of finding one

O(M + N), because regardless of however many occurrences, the algorithm compares each text character exactly once

O(M^N), because we'll be comparing all text characters to pattern characters

# Answer 2:

O(M + N), because regardless of however many occurrences, the algorithm compares each text character exactly once.

# Question 3:

**Which of the following is true regarding pre-processing in KMP?**

#### Select the correct choice:

We need to pre-process entire text, but not pattern

We need to pre-process pattern, but not text

# Answer 3:

We need to pre-process pattern, but not text

# Question 4:

**In what case, does the entire pre-processed table for KMP consist of all zeroes?**

#### Select the correct choice:

When the pattern is all the same characters e.g. aaaa

When the pattern is all different characters e.g. abcd

When the pattern has exactly two letters in the alphabet, occurring exactly equal number of times e.g. aazz

When the pattern is bigger than the text

# Answer 4:

When the pattern is all different characters eg. Abcd