

Section - 6

Q. 2.

$\{0, 01, 11, 111\}$

Sol. The codeword 0 is prefix to codeword 01 with dangling suffix 1 and add it to the list.

$\{0, 01, 11, 111, 1\}$

2) The codeword 1 is prefix to 11 and 111 with dangling suffix 11 but 11 is already a codeword itself so it is not uniquely decodable.

1.) $\{0, 01, 110, 111\}$

The code word 0 is prefix to codeword 01 with dangling suffix 1 and add it to the list.

$\{0, 01, 110, 111, 1\}$

The codeword 1 is prefix to 110 and 111 with the dangling suffix 10 and 11. Now add it to the list.

$\{0, 01, 110, 111, 1, 10, 11\}$

Here 1 and 0 is already a codeword itself, so it is not uniquely decodable.

2) $\{1, 10, 110, 111\}$

The codeword 1 is prefix to 10 with dangling suffix 0, also 1 is prefix to 110 with dangling suffix 10 and 1 is also prefix to 111 with dangling suffix 11. Now add all the suffix to the list.

$\{1, 10, 110, 111, 0, 10, 11\}$

Here, we can see the codeword 10 is already present in the list, so it is not a uniquely decodable.

3) $\{0, 01, 10\}$

The codeword 0 is prefix to codeword 01 with dangling suffix 1, add it to the list.

$\{0, 01, 10, 1\}$

The codeword 01 is prefix to 10 with

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dangling suffix 0 but 0 is already
a codeword itself then
the code is not uniquely
decodable.