Exercise 1: How many flip-flops would be required to generate a ML PRBS of period 16383? How many ones would the sequence have?

$$16383 = 2^{\boxed{14}} - 1$$

# of FFs is 14.

$$2^{10} = \underline{1024}$$
$$2^{4} = \underline{16}$$
$$2^{14} = 16 \times 1024$$

$$\# \text{ ones} = 2^{K-1} = 2^{14-1} = 2^{13} = 8192$$

Exercise 2: Why not?

does not provide secrecy because anyone with a descrambler can recover the data

Exercise 3: How many errors will appear in the output of a V.22 descrambler if there is one input error?

3 — 1 for the input
2 for the effect on each of the SR taps in the descrambler.