1. 1) 解: $T_{pipe} = \frac{7ns + 0.1ns \times 4}{5} = 1.48ns$

2) 解: $S = \frac{N}{N+k-1} \times \frac{T_{old}}{T_{pipe}} \approx \frac{T_{old}}{T_{pipe}} = \frac{7}{1.48} \approx 4.73$

3) 解: 当 $k \to \infty$ 时

$$T_{pipe} = \frac{7ns + 0.1ns \times 4}{k} = \frac{7.4}{k} ns.$$

$$S = \frac{N}{N+k-1} \times \frac{T_{old}}{T_{pipe}} = \frac{N}{N+k-1} \times \frac{k \times 7ns}{7.4ns}.$$

$$= \frac{N}{\frac{N}{k}+1-\frac{1}{k}} \times \frac{7ns}{7.4ns} \to 0.95N$$