We say that a function is in the class $\mathcal{NC}$ if the function can be computed in polylogarithmic time by polynomially many processors.

At the start of the computation of such a function, each symbol of the input string could be read by a different processor, and at the end, each symbol of the output string could be written by a different processor.

True/False Questions, Part III

1. True or False. T = true, F = false, and O = open, meaning that the answer is not known science at this time. In the questions below, $\mathcal{P}$ and $\mathcal{NP}$ denote $\mathcal{P}$-TIME and $\mathcal{NP}$-TIME, respectively.

(lxxxix) ________ If a computable sequence of fractions converges to x, then x must be a recursive real number.

(xc) ________ If L is a recursively enumerable language, there must be a computable reduction of L to the halting problem.

(xci) ________ If two context-free grammars are equivalent, there is must be a proof that they are equivalent.

(xcii) ________ If two context-free grammars are not equivalent, there is must be a proof that they are not equivalent.

(xciii) ________ The membership problem for any regular language is $\mathcal{NC}$.

(xciv) ________ Given any sequence $M_1, \ldots M_n$ of $n \times n$ Boolean matrices, the product $M_1 \times M_2 \times \cdots \times M_n$ is $\mathcal{NC}$ computable.

(xcv) ________ The problem of determining whether a given integer is a square is $\mathcal{NC}$.

(xcvi) ________ The set of all real numbers which are limits of convergent sequences of fractions is countable.

(xcvii) ________ $\sqrt{2}$ is a recursive real number.

(xcviii) ________ Let x be a real number whose decimal digits are all either 0 or 1. then x must be a redursive real number.

(xcix) ________ Every context-sensitive language is decidable.

(c) ________ $\mathcal{P}$–TIME = EXP–TIME.

(ci) $\mathcal{NC} = \mathcal{P}$–SPACE.‘ ________

(cii) The time to decide whether a Boolean expression is satisfiable is exponential in the worst case. ________