Compiler Construction

Give a BNF syntax for unsigned floating point constants that would allow constants such as

\begin{align*}
& 1.2 \quad 3\text{E}4 \quad 0.23\text{E}-8 \\
\text{but not} \quad & .123 \quad 20. \quad 21.\text{E}4
\end{align*}

[6 marks]

Construct a finite state machine that could be used in a lexical analyser to read in such floating point numbers. [7 marks]

Show how this finite state machine can be extended to evaluate the floating point number it reads. [7 marks]