Compiler Construction

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

\[
\begin{array}{ccc}
1.2 & 3E4 & 0.23E-8 \\
\end{array}
\]

but not

\[
\begin{array}{ccc}
.123 & 20. & 21.E4 \\
\end{array}
\]

[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]