2002 Paper 13 Question 5

Comparative Programming Languages

(*a*) Briefly discuss the compromises that must be made when standardising a programming language. [8 marks]

(*b*) Discuss the relative merits to (1) the application programmers and (2) compiler writer of the following ways of specifying a programming language.

    (*i*) A concise readable user manual for the language in English containing many useful programming examples.

    (*ii*) A very long and highly detailed description, in English, of every feature of the language. This manual contains no programming examples.

    (*iii*) A concise but rigorous description using a formal grammar to describe the language syntax and making extensive use of mathematical notations taken from set theory, λ-calculus, predicate calculus and logic to describe the semantics of the language.

    (*iv*) The source code for a clean and elegant machine-independent interpretive implementation of the language.

[12 marks]