MCA(6/7)/D-12
PRINCIPAL OF PROGRAMMING LANGUAGES
Paper-MCA-305

Time allowed: 3 hours   Maximum marks: 80

Note: Attempt five questions in all. Question no. 1 is compulsory. Carries 24 marks.
    In addition to compulsory question, attempt four more questions selecting one
    Question from each unit, each question carries 14 marks.

Compulsory Question
1. (a) Differentiate between implicit and Explicit type conversation.
   (b) Explain the basic purposes of declaration.
   (c) What is the difference between Syntax and Semantics?
   (d) Give one difference and one similarity between the following programming languages:
       (i) Algol and SIMULA.
       (ii) LISP and Smalltalk.
   (e) List three differences between the programming languages FORTRAN and LISP.
   (f) What is an Ambiguous grammar?
   (g) Write short notes on the following:
       (i) Information hiding.
       (ii) Imperative Language paradigm.
   (h) What do you mean by Referencing Environment?   8x3=24

Unit-I
2. (a) What are the design issues of programming language? Define Orthogonality and
        Portability in the context of programming language design.
   (b) What is the trade of involved with early versus late binding?   7+7=14
3. (a) Differentiate between Control abstraction and Procedural Abstraction.
   (b) Differentiate between Array and Record data structure.
   (c) Explain the attributes of a good language.   5+5+4=14

Unit-II
4. (a) Give three different ways to describe a formal language .
   (b) What are the four level of the Chomsky hierarchy?
   (c) Give a regular expression to describe strings with more than one pair of consecutive
        a,s.   5+5+4=14
5. What are the advantages and disadvantages of using a stack of activation records provide for
    Variable access in block structured programming languages?   14

Unit-III
6. What is Functional programming? Explain the features of functional languages.   14
7. (a) Describe the support of Object-oriented programming in Ada 95.
   (b) What is the "Dangling else" problem? How is it avoided in modern languages?   7+7=14

Unit-IV

8. (a) Explain the significance of functions in PROLOG.

(b) Define property list in LISP. Explain it with its access procedures. 7+7=14

9. Write detailed notes on the following:

(a) Semantic data model.

(b) SQL.

(c) Object-oriented database model. 5+5+4=14