Roll No. ....   Total No. of Pages : 3

MCA/D11   4530

Principles of Programming Languages

Paper : MCA–305

Time : Three Hours]   [Maximum Marks : 80

Note :— Attempt FIVE questions in all. Question Number 1 is compulsory. In addition to compulsory question, attempt FOUR more questions, selecting ONE question from each unit.

1. (i) Give the accessing formula for computing the location of component A[I, J] of a matrix A declared as : A : array [LB1..UB1, LB2..UB2] where A is stored in Column-major order.   3

   (ii) What is narrowing type conversion ?   3

   (iii) What are the different sections in PROLOG program ?   3

   (iv) Define Orthogonality.   3

   (v) What is Rendezvous ?   3

   (vi) Define type-0 grammar.   3

   (vii) What is Data Control Language (DCL) ?   3

   (viii) What is an ambiguous grammar ?   3

UNIT–1

2. (a) What do you understand by type-equivalence ? Differentiate between name, equivalence and structural equivalence. Also discuss their advantages and disadvantages.   7

   (b) What is Binding ? Explain the name, address, value, and type binding using suitable examples.   7

3. (a) What do you understand by control abstraction ? Explain using suitable example.   7

   (b) What do you understand by strong and weak typing ? Discuss the advantages of Explicit type declaration over implicit type declaration.   7

UNIT–II

4. What is a Finite State Automata ? Give the finite state automaton and the regular grammar for the following :-

   (a) All strings over {0, 1} containing the string 010.

   (b) All strings over {0, 1} which do not contain the string 010. 14

5. (a) Why would an array passed by value-result require more memory than the same array passed by reference ?   7

   (b) What advantages are there in passing by reference instead of using global variables ? http://www.kuonline.in   7

UNIT–III

6. (a) What is the difference between redefining a method M ( ) in a subclass where M ( ) has already been defined in a super class, and defining a method in a subclass that had been declared abstract in a super class ? When would you want to use each ? 7

   (b) Discuss the scope of public, private and protected members of a class using suitable examples.   7

7. What do you understand by functional language ? How do they differ from procedure oriented and object oriented languages ? Discuss the parameter passing techniques in LISP.   14

UNIT—IV

8. What are the different problems that should be avoided when scheduling cooperating processes ? Explain. 14

9. Differentiate between the following :-

   (a) Cut and fail predicates in PROLOG using suitable example. 7

   (b) DDL and DML. 7