

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-I

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. (a) 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 ? 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