

Roll No.....

MCA (8-9)/D-14 19389
PRINCIPLES OF PROGRAMMING LANGUAGES
Paper—MCA—305

Time Allowed : 3 Hours]

[Maximum Marks : 80

Note : Attempt five questions in all, selecting at least one question from each Unit. Question No. 1 is compulsory.

Compulsory Question

1. (a) Differentiate between Compile-time and Run-time binding.
- (b) What do you mean by Scope and Lifetime of variables?
- (c) What is Regular Grammar? Provide an example.
- (d) What do you mean by Imperative Programming?
- (e) Discuss the need of Object-oriented Programming.
- (f) Describe the benefits of Recursion.
- (g) What is Resolution? Give an example.
- (h) What is Synchronization?

8 > 3 = 24

UNIT-I

2. (a) Each programmer has its own preference for using a programming language. What are the reasons for this? 7
- (b) What do you understand by Data Type? Describe the specification and implementation of Data types in various languages. 7
3. (a) Describe concept of type checking and type conversion in various languages with suitable examples. 7
- (b) What do you mean by Abstraction? Explain various types of abstractions in detail. 7

UNIT-II

4. What is the role of Determinism in Pushdown automata? Give two examples each of deterministic and non-deterministic pushdown automata accepted languages with their PDA. 14
5. (a) Describe about Macro expansion in detail. 7
- (b) What do you mean by Structured Programming? Write a structured program to find reverse of the input number. 7

UNIT-III

6. Differentiate between the following 1
- (a) Inheritance and Polymorphism.
- (b) Object-oriented Programming and Procedural Programming.
- (c) Data abstraction and Information abstraction. 14
7. (a) Write a procedure that computes the maximum and minimum of a list of integers in ML or Scheme. 7
- (b) Discuss various applications of Functional Language. 7

UNIT—IV

8. (a) What is Bounded Buffer Problem? How it can be solved through synchronization? Explain. 8
- (b) Write the statements to calculate the greatest common divisor of two positive integers, u and v :
 - (i) Using first-order predicate logic

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| (ii) Using Horn clauses. V | 6 |
| 9. (a) Write and explain three statements each in DDL, DCL and DML command in SQL. | 7 |
| (b) Discuss various applications of Logic programming with appropriate examples. | 7 |