

MCA/M-16
PRINCIPLES OF PROGRAMMING LANGUAGES
PAPER : MCA-14-23

Time Allowed: 3 Hours

Maximum Marks: 80

Note: Attempt five questions in all. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) What are the merits and demerits of eager and lazy evaluation?
- (b) What is imperative programming?
- (c) Why would an array passed by value-result require more memory than the same array passed by reference?
- (d) What is the difference between regular grammar and context free grammar?

UNIT-I

2. (a) What is the difference between Lexical analysis and Syntax analysis? What are the primary tasks of a lexical analyzer? Discuss.
- (b) What are the effects of programming environments on the features of a programming language? Discuss.
3. (a) What is Parsing? What is the difference between Top-down and Bottom-up parsing? Write a note on recursive descent parsing.
- (b) What do you understand by Binding and Binding Time? Differentiate between Run-time and Compile-time bindings using suitable examples.

UNIT-II

4. (a) What is an ambiguous grammar? Using an example show that following grammar is an ambiguous grammar :

A- Aa | Aa | e

- (b) What is the difference between Implicit and Explicit type conversion? What is type promotion? Explain using suitable example.

5. (a) What is BNF grammar? Write a BNF grammar for the language composed of all binary numbers that contain at least three consecutive I's. Draw its FSA also.
- (b) Write a note on specification and implementation of integer data type.

UNIT-III

6. (a) What is the concept of abstract data type (ADT)? How is it implemented in C++? Explain using suitable example.
- (b) What are the different issues in sequence control within expression? Discuss.
7. (a) What are the different implementations of loops in programming languages? Explain.
- (b) What is the difference between overloading and over-riding of functions? Discuss using suitable examples.

UNIT-IV

8. Differentiate between following
- (a) Call by value and call by result.
- (b) Programmer controlled and system controlled storage management.
9. (a) What is XML? What is the use of XML? What are the syntax rules for XML? Discuss using suitable examples.
- (b) What is WWW? What is HTML? What is the difference between HTML and XML? Discuss.