Unit IV

8. (a) Differentiate between static and dynamic scope using suitable examples.

(b) What is the difference between call by value and call by result parameter passing techniques ? Discuss.

9. (a) Define race conditions and deadlocks in the context of parallel programming.

(b) What is a scripting language, and how does it differ from traditional programming languages ? List key characteristics that are commonly associated with scripting languages.

CMCQ/D-23   **24047**

PRINCIPLES OF PROGRAMMING LANGUAGES

MS-20-33 (iii)

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Differentiate between narrowing and widening type conversion. Explain using suitable examples from C.

(b) Write a note on inheritance and software reuse.

(c) What is an abstract method, and how does it differ from a regular method ? Can an abstract class have non-abstract (concrete) methods ?

(d) Differentiate between left linear and right linear regular grammars.

Unit I

2. (a) What do you understand by binding and binding time ? In the following statement of C language discuss the different types of binding, $a = a + 10$; where a is an integer.

(b) What do you understand by scanning or lexical analysis ? What activities are carried out by compiler during scanning ? Explain.

3. (a) What activities are carried out during synthesis phase of compilation ? Discuss.

(b) How have paradigm shifts influenced the evolution of programming languages ? Provide examples of significant paradigm shifts in the history of programming.

Unit II

4. (a) Write a grammar to identify a string consisting of characters a–z and 0–9. The first character of the string is to be a letter only. Draw an FSA also.

(b) What is an ambiguous grammar ? How do precedence and associativity rules contribute to resolving ambiguity ? Discuss.

5. (a) What do you understand by type checking ? Differentiate between static and dynamic types checking.

(b) What is PDA ? Provide a PDA that recognizes the language of palindromes over the alphabet $\{0, 1\}$.

Unit III

6. (a) Explain the concepts of late binding and early binding in the context of polymorphism. How are these concepts related to runtime polymorphism ?

(b) What do you understand by structured data types ? Discuss the major attributes required for specifying data structures.

7. (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 ?

(b) What is structured programming ? How is it carried out ? Discuss.