

Roll No.

Total Pages : 03

BT-3/D-22

43220

PROGRAMMING LANGUAGES

PC-CS-AIDS-209A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Differentiate between orthogonality and abstraction in the programming languages. 5
- (b) What are the major cost measures of any programming language ? 5
- (c) Define binding and binding times. What are the different design classes of binding times in the designing of programming languages ? 5
2. (a) Discuss the concept of optimization in a compiler. 5
- (b) Discuss the specification and implementation of subranges and enumerations in elementary data types. 5

- (c) Write down the BNF grammar and generate the parse tree for the following sentence :
“We are playing the game of football for the last ten years.” 5

Unit II

3. (a) What is the basic role of using structured data objects ? How to implement information hiding and overloaded subprograms ? 8
(b) Discuss the specification and implementation of union, pointer and character strings. 7
4. (a) What are the main problems which are associated with the complex structured data types ? 8
(b) Differentiate between linked storage representation and sequential storage representation. 7

Unit III

5. (a) What is basic role of referencing environment ? Explain the concepts of call by reference and call by name for transmitting parameters. 8
(b) Discuss the following by taking their relevant significance and roles : 7
(i) Synchronization through semaphores
(ii) Monitors
(iii) Message passing.

6. (a) Explain the concept of static scoping and dynamic scoping by taking some practical examples of any programme language. 8
- (b) Discuss the role of short-circuit Boolean expressions in sequencing with the help of suitable examples. 7

Unit IV

7. (a) Define garbage and dangling references in storage management. 8
- (b) Differentiate between stack based storage management and heap storage management for variable and fixed size elements. 7
8. (a) Discuss the following concepts in relation to Ada and Smalltalk : 8
- (i) Subprograms and storage management
- (ii) Abstraction and encapsulation.
- (b) Differentiate between structural and logical programming languages by taking some programming examples. 7