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BT-3/D-21 **43199**

PROGRAMMING LANGUAGES

Paper–PC-CS-AIDS-209 A/PC-CS-AIML-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) Discuss the technical role of orthogonality and abstraction in programming languages with the help of suitable examples. 08

(b) What are the basic purposes for declarations in elementary data types? 07

2. (a) Identify the main role of attribute grammars in formal translation models with the help of suitable examples. 08

(b) Design and discuss the syntax charts for extended BNF for six simple assignment statements. 07

UNIT–II

3. (a) What is the basic usage of structured data objects? How to implement encapsulation by subprograms? 08

(b) Discuss the specification and implementation of vector and multidimensional slices. 07

4. (a) How the type definition is used as a template to construct data objects during program execution? 08

(b) Write short notes on the following :

(i) Overloaded subprograms.

(ii) Generic subprograms. 07

UNIT–III

5. (a) What is basic role of referencing environment? Explain the concepts of call by value result and call by name for transmitting parameters. 08

(b) Discuss the role of short-circuit Boolean expressions in sequencing with the help of suitable examples. 07

6. (a) What are the various problems associated in structured sequence control? Briefly discuss the concept of structure theorem in sequence control. 08

(b) Briefly discuss the role of mutual exclusion in sequence control. 07

UNIT–IV

7. (a) Define garbage and dangling references in storage management. 08

(b) Discuss the four basic concepts that are used in the heap storage management for variable size elements. 07

8. (a) Discuss the following concepts in relation to Ada and Smalltalk :

(i) Sequence control.

(ii) Subprograms and storage management.

(iii) Abstraction and encapsulation. 08

(b) Differentiate between functional and logical languages. 07
