

**PRINCIPLES OF PROGRAMMING LANGUAGES**

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Write any four reasons for studying programming languages.
  - (b) Explain the usage of Parse tree in representing syntax of the language.
  - (c) Define associative array and union.
  - (d) State problems with unconditional branching statement.
  - (e) List out design issues for subprograms.
  - (f) Discuss about nested subprograms.
  - (g) Compare about various categories of concurrency.
  - (h) What is preposition? Explain its association with Symbolic logic.
  - (i) What data types were part of the original LISP?
  - (j) Mention Python data types and its values.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 (a) Discuss any two syntax description methods.  
(b) Write possible approaches for building lexical analyzer.

**OR**

- 3 (a) Illustrate the syntax tree for  $(a - b / c + d * e + f)$ .  
(b) What is type checking? Explain issues regarding type compatibility.

**UNIT – II**

- 4 (a) Discuss primary design issues specific to arrays.  
(b) Write about relational operators used in Ada, Java and FORTRAN90.

**OR**

- 5 (a) Describe about various control flow statements used in Java.  
(b) Discuss the various approaches to evaluate the expressions.

**UNIT – III**

- 6 (a) Explain about genetic subprograms.  
(b) Demonstrate the call by reference with an example.

**OR**

- 7 (a) List out Generic functions in C++ and compare against Java generic functions.  
(b) Write a Java code in implementing subprograms with Stack-Dynamic local variables.

**UNIT – IV**

- 8 (a) Explain how concurrency mechanism works in Ada.  
(b) How exceptions are handled in Java? Give examples.

**OR**

- 9 Analyze the working of Java threads with an example.

**UNIT – V**

- 10 Write short notes on mathematical functions and applications of functional programming languages.

**OR**

- 11 Describe about Python variables and their operations.