

Level: Bachelor Semester: Spring Year : 2018
 Programme: BE Full Marks: 100
 Course: Principles of Programming Language Pass Marks: 45
 Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What are the characteristics of good programming language? How pseudocode interpreter can simplify programming? 7
 b) Describe the control structure of FORTRAN. 8
2. a) Mention looping in FORTRAN by writing the program to find out the cube root of first 20 natural numbers? 8
 b) Give specific examples where FORTRAN-IV violates the principles of programming languages. 7
3. a) Why are naming structures essential for programming? Explain the name Structure of ALGOL-60. 8
 b) How are Context-free and regular grammars used in the describing programming languages? 7
4. a) Translate the following expressions into LISP 8

$$\frac{1}{2}\sqrt{\pi r^2 - l^2} \quad \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$
 b) Write assoc function in LISP to access the value of a-list. How would you handle the case where the requested attribute is not associated by a-list? 7
5. a) Briefly explain the following structures in LISP 7
 i. The conditional expression
 ii. The logical connectives
 iii. Mapcar and reduce functions
 b) Compare and Contrast object oriented programming facilities in C++ and Java. 8
6. a) Describe three forms of message template in SMALLTALK. 7
 b) How is Activation Record represented in SMALLTALK.? 8

7. Write short notes on: (Any two)

- a) Pseudocode
- b) User defined function in LISP
- c) Contour Diagrams