POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2021
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) Illustrate the concept of different programming paradigms with examples. 7
   b) Discuss the functionalities covered by Pseudo-code with supported principles. 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) Discuss the use of activation records in modular programming. Support your answer with suitable examples. 7
   b) How has the concept of hierarchical structure been implemented in ALGOL? Elaborate. 8
4. a) Translate the following expressions into LISP 8

   $\frac{1}{2}\sqrt{\pi r^2 - l^2}$ $\frac{-b-\sqrt{b^2-4ac}}{2a}$

   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) Describe the basic concept of object oriented programming. Discuss the impact of dynamic lookup in SmallTalk. 7
   b) How do we design a programming language to collect and free the previously used by currently empty memory space? Explain the object and class representation in SmallTalk. 8

6. a) Briefly explain the following structures in LISP 7
      i. The conditional expression
      ii. The logical connectives
      iii. Mapcar and reduce functions
   b) Describe three forms of message template in SMALLTALK. 8
7. Write short notes on: (**Any two**) 2×5
   a) Backus-Naur Form
   b) Contour Diagrams
   c) Characteristics of first generation programming language