COMP 3 – 3 (RC)

S.E. (Comp.) (Semester – III) (Revised Course) Examination, November/December 2015
PRINCIPLES OF PROGRAMMING LANGUAGES

Duration : 3 Hours | Total Marks : 100

Instructions : *1) Attempt **any 5** questions by selecting atleast **one** from **each** Module.*
*2) Make suitable assumptions, **if required**.*

MODULE – I

1. a) Explain briefly the syntactic elements of a language. 5
   b) What is language standardization ? Mention and explain different types of standards. 7
   c) Write a short note on : 8
      i) Syntax and semantics
      ii) Classes of binding times.

2. a) Draw the structure of compiler and explain lexical analysis. 5
   b) Explain type conversion and coercion with examples. 7
   c) Explain the following : 8
      i) Information Hiding
      ii) Elementary data types.

MODULE – II

3. a) Explain with an example short circuit Boolean expression. 4
   b) Give tree structure representation for the following expression assuming c-precedence $\frac{-B \pm \sqrt{B^2 - 4 * A * C}}{2 * A}$. 6
   c) Explain aliasing of data objects with the help of an example. 4
   d) Write short notes on the following : 6
      i) Term Rewriting
      ii) Unification.

P.T.O.

4. a) What is an activation record ? Explain the attributes. 4

   b) Explain static scope and dynamic scope. 4

   c) What is parameter transmission ? Differentiate between actual and formal parameters. Give suitable example and explain 'call-by-value'. 6

   d) Explain the following : 6

      i) Current Instruction Pointer (CIP)

      ii) Referencing Environments.

MODULE – III

5. a) Explain the following with respect to synchronization of tasks : 6

      i) Semaphores

      ii) Monitors

      iii) Critical Regions.

   b) What do you mean by parallel programming ? Explain the various principles involved. 6

   c) Illustrate and explain how control is transferred between co-routines. 5

   d) Explain the properties of Type 3 grammar giving examples of each. 3

6. a) Write a PROLOG program to calculate factorial of a given number. 5

   b) Explain Reader-Writer Problem. Discuss its solution using semaphores. 5

   c) Explain the various sequence control statements in FORTRAN. 5

   d) Write a short note on exceptions and exception handlers. 5

MODULE – IV

7. a) Explain storage management in PASCAL. 6

   b) Explain how sequence control is implemented in smalltalk. 6

   c) Why is LISP called a Functional Programming Language ? Illustrate the features of using LISP syntax to support your answer. 8

8. a) Write a PASCAL program to find the sum of elements in an array. 8

   b) Discuss the data objects in LISP. 6

   c) Discuss the primitive datatypes in Ada. 6
