**R13**

## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
### B. Tech III Year I Semester Examinations, November/December - 2016
### PRINCIPLES OF PROGRAMMING LANGUAGES
(Computer science and Engineering)

Time: 3 hours                                                                 Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

## PART - A
(25 Marks)

1.a)  Define syntax and semantics.                                                [2]
  b)  List out language categories.                                              [3]
  c)  What is the purpose of assignment statement?                              [2]
  d)  What is a variable? What are the attributes of a variable?                [3]
  e)  Differentiate between function and procedure.                            [2]
  f)  Write an example of call and return statements.                          [3]
  g)  What is the difference between a C++ class and an Ada package?           [2]
  h)  Define Semaphore and monitor.                                            [3]
  i)  Write the advantages of scripting languages.                            [2]
  j)  What are the applications of functional programming languages?          [3]

## PART - B
(50 Marks)

2.a)  How can user-defined operator overloading harm the readability of a program? Explain.
  b)  Define grammars, derivation and a parse tree:                            [7+3]

OR

3.a)  Discuss about language recognizers and language generators.
  b)  Describe the basic concept of axiomatic semantics.                       [5+5]

4.a)  Explain in detail counter-controlled loops.
  b)  What are various design choices for string length?                      [5+5]

OR

5.a)  What are the design issues for names?
  b)  Explain associative arrays, their structure and operations.             [3+7]

6.a)  Explain the scope and lifetime of variables with examples.
  b)  What are the characteristics of co-routine feature? List the languages which allow co-routines.                                                          [5+5]

OR

7.a)  Explain how subprogram names are passed as parameters. Illustrate with examples.
  b)  Discuss user-defined overloaded operators.                              [5+5]

8.a) What is meant by logic programming? Explain different types of applications of logic programming.

b) Discuss briefly exception handling in ADA. [5+5]

**OR**

9.a) What is the difference between checked and unchecked exception in java?

b) Briefly Explain the Sub-program level concurrency. [4+6]

10.a) Compare functions in ML and Haskell.

b) Write about the operations that can be performed on atoms and lists in LISP. [4+6]

**OR**

11.a) Make a comparison between functional and imperative Languages.

b) Write a short note on data and procedural abstraction. [5+5]

---ooOoo---