Code: CS4T4

II B.Tech - II Semester – Regular/Supplementary Examinations
April 2019

PRINCIPLES OF PROGRAMMING LANGUAGES
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer *all* the questions.   All questions carry equal marks

$$11 \times 2 = 22 \text{ M}$$

1.

   a) Brief on parsing.

   b) Define data object.

   c) Mention any two design issues for arithmetic expressions.

   d) Brief on activation record.

   e) What is meant by type checking?

   f) What do you mean by dynamic semantics?

   g) Mention any four important functions of LISP.

   h) Differentiate between procedural languages and object oriented languages.

   i) List any four reasons for studying concepts of PL.

   j) What are Guarded Commands?

   k) Brief on co-routines.

PART – B

Answer any *THREE* questions. All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2. a) How Computer Architecture and Programming Design Methodologies influences language design? Explain.

10 M

b) Explain the Layered interface of virtual machine, provided by a typical computer system. 6 M

3. a) Using the following grammar derive the expression
   $A = B * (A + C * D) * A$.
   Draw the parse tree for the same.
   <assign> → <id> = <expr>
   <id> → A | B | C
   <expr> → <id> + <expr>|<id> * <expr> | (<expr>) | <id>
   Is this grammar is ambiguous? If yes, generate an unambiguous grammar for the same. 10 M

b) Give a brief on how denotational semantics describe the meaning of programs. Give the complete denotational semantics of assignment statement. 6 M

4. a) Give the design issues that are specific to character string types. Explain different operations over it w.r.t languages C and C++. Explain the Run-time descriptor for limited dynamic strings. 10 M

b) What are named constants? Give Example. Explain how they are handled in languages like C#, ADA and Java with suitable example code. 6 M

5. a) What is if-else problem? Discuss how it can be handled by the programming language. 8 M

b) Explain in detail multiple selection constructs. 8 M

6. Explain different types of parameter passing mechanisms with suitable example code for each. 16 M