

(Following Paper ID and Numbers to be filled in your Answer books)

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Roll No:

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B.TECH
(SEM. V) (ODD SEM) THEORY EXAMINATION, 2015-16
Principle of Programming Language

Code: NCS-503

Time: 3 Hours

[Total Marks: 100]

Section-A

Q.1 Attempt all parts. All parts carry equal marks. Write answer of each part in short.

(2x10 = 20)

- (a) What is a programming language?
- (b) What are the external influential factors of programming language?
- (c) What do you understand by binding and binding time?
- (d) What is the general syntactic criterion of programming language?
- (e) What is software simulation?
- (f) Write the name of components of the referencing environment of a subprogram.
- (g) What is the difference between subprogram definition and subprogram activation?
- (h) Can we have inheritance without polymorphism?
- (i) What is Object Oriented Language?
- (j) For a language with which you are familiar, find an example of a primitive operation that has an implicit argument.

Section-B

Note: Attempt any **five** parts. All parts carry equal marks: **(5x10=50)**

- Q.2** Compare C and LISP on the basis of various attributes.
- Q.3** What do you understand by operating and programming environment? List various attributes of a good operating and programming environment.
- Q.4** Describe sequence control and its types. What are recursive subprograms?
- Q.5** (a) What makes a good programming language?

- (b) Show that a grammar is ambiguous if and only if some string in the language has two distinct leftmost derivations.
- Q.6** (a) For an elementary data type in a language with which you are familiar, explain the differences between data objects of that type and the values that those data objects may contain.
- (b) How does the C++ model for exceptions differ from the Java model?
- Q.7** What is parameter passing? What are actual and formal parameters? Explain call by value and call by reference.
- Q.8** Describe implicit and explicit sequence control with example.
- Q.9** The dynamic scope rule specifies that non locals must be evaluated in the calling environment. Explain why MACRO expansion of procedure calls produces the same result as would be obtained under the dynamic scope rule.

Section-C

Note: Attempt any **two** questions from this section. (2×15=30)

- Q.10** Suppose that one wants to write a function which concatenates two strings and it calls the storage allocator to get space for the new string. Should this be considered a side effect? Justify your answer.
- Q.11** (a) Define scope, static scope, and dynamic scope.
- (b) What are the advantages and disadvantages of dynamic scoping?
- Q.12** Suppose that you wished to design a language that used: (i) retained local environments. (ii) No recursive subprogram calls and (iii) non-local references based on dynamic scope. Explain how the referencing environment is represented. Explain the actions taken on subprogram call and return. Explain how nonlocal '-' referencing is implemented