

**II B.Tech II Semester Supplementary Examinations,  
November/December 2005  
PRINCIPLES OF PROGRAMMING LANGUAGES  
(Computer Science & Systems Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions  
All Questions carry equal marks**

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1. (a) Evaluate the reasons for success of 'C' Language according to the list of criteria by which programming language design can be judged.  
(b) Write a BNF grammar for language of all binary numbers that contain at least 3 consecutive 1's. [8+8]
2. (a) Explain Loop Statements in Ada programming language.  
(b) What does it mean for an expression to be referentially transparent? [8+8]
3. (a) What is type checking ? Discuss the various types of type checking.  
(b) What is Aliasing ? Explain with examples. [8+8]
4. Discuss the issue of scope and extent with examples from Algol 60 and PL/1 languages. [16]
5. (a) Explain coroutine relationships between two procedures with an example.  
(b) Write an example generic procedure to add the elements of type VECTORS using ADA. [8+8]
6. Give the abstract specification of:  
(a) Stack.  
(b) Binary search tree. [7+9]
7. (a) What is semaphore. Explain about binary semaphore and counting semaphore.  
(b) Describe how semaphores can be used to solve producer-consumer problem. [8+8]
8. (a) Explain main features of imperative languages.  
(b) Write a LISP function Fib(n) that computes nth Fibonacci number. [6+10]

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