

III B.Tech I Semester Regular Examinations, November 2005
PRINCIPLES OF PROGRAMMING LANGUAGES
(Common to Computer Science & Engineering and Computer Science &
Systems Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Compare procedure oriented and object oriented programming. Explain the object oriented features supported by C++. [16]
2. Describe the approach of using axiomatic semantics to prove the correctness of a given program. [16]
3. (a) What is the general problem with static scoping. [6]
(b) What is block. How scope of a variable is dependent on block. [5]
(c) What is life time. [5]
4. (a) What is pointer. How memory is allocated for pointers. and for arrays. What is the difference. [5]
(b) What are the advantages of pointers and disadvantages with pointers. [5]
(c) Explain how different programming languages support pointers. [6]
5. (a) Explain how multidimensional arrays are passed as parameters? [8]
(b) Explain how subprograms are overloaded? [8]
6. (a) Discuss the design issues of abstract data types. [8]
(b) What are the advantages of cooperation synchronization in java thread class. [8]
7. (a) All prolog statements are constructed from Terms. Justify your answer. [8]
(b) Explain Fact and Rule statements in prolog with suitable examples. [8]
8. Explain the PROG features of LISP. [16]

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1. (a) Exception handling is very important, but often neglected by programming languages. Comment on it. [6]
(b) What are the disadvantages of aliasing. [5]
(c) Readability and writability influence the reliability. Comment on it. [5]
2. (a) In what way do operational semantics differ from denotational semantics. [8]
(b) What purpose do predicates serve in an attribute grammar. [8]
3. A variable is more than a name given to a memory location. What are the attributes of a variable. Explain in detail. [16]
4. Discuss implementation issues associated with pointer and reference data types. [16]
5. (a) Discuss about actual parameters, positional parameters and keyword parameters. [8]
(b) Explain the general subprogram characteristics. [8]
6. How message passing is implemented in Ada ? Explain. [16]
7. (a) Discuss Terms and Goal statements in prolog. [8]
(b) Explain prolog interfacing process. [8]
8. (a) Give brief description about functions in Haskell. [8]
(b) Explain functions with examples in ML. [8]

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1. C is suitable for systems programming. What are the features provided by C language which makes it suitable for systems programming. [16]
2. Write short notes on lexemes, language recognizers, and language generators. [16]
3. (a) What is the general problem with static scoping. [6]
(b) What is block. How scope of a variable is dependent on block. [5]
(c) What is life time. [5]
4. (a) What is short circuit evaluation. What is its advantage. [8]
(b) Explain the side-effect related to expression evaluation. [8]
5. (a) Discuss about actual parameters, positional parameters and keyword parameters. [8]
(b) Explain the general subprogram characteristics. [8]
6. (a) Discuss the design issues of abstract data types. [8]
(b) What are the advantages of cooperation synchronization in java thread class. [8]
7. (a) Write prolog program to compute the sum of numbers using arrays. [8]
(b) Explain exception handling in java. [8]
8. (a) What is CONS. How CONS is related to CAR and CDR. Explain with an example. [8]
(b) Represent the following CONS operations in linked list
 i. (CONS 'A' ())
 ii. (CONS 'A' (B C))
 iii. (CONS '() ' (A B))
[8]

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1. A programming language can be compiled or interpreted. Give relative advantages and disadvantages of compilation and interpretation. Give examples of compiled and interpreted languages. [16]
2. What is BNF notation. Explain it with examples. [16]
3. (a) What is the general problem with static scoping. [6]
(b) What is block. How scope of a variable is dependent on block. [5]
(c) What is life time. [5]
4. What are unconditional branching statements supported by different programming languages. What are their limitations. [16]
5. (a) Discuss the design issues of subprograms. [8]
(b) Discuss about the procedures and functions in subprograms. [8]
6. Explain java threads with examples. [16]
7. (a) Explain the basic concepts of exception handling. [8]
(b) In what way C++ throw specification differs from throw clause in java. [8]
8. (a) Write a LISP function that calculates sum of numbers using a vector. [8]
(b) Discuss briefly about LISP primitive data types. [8]
