

III B.Tech I Semester Regular Examinations, November 2006
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. Explain the fundamental features of object oriented programming languages with examples. [16]
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) Define Data type. Why every programming language supports different data types. (What happens if no data types are supported). [10]
(b) What is user defined data type. Why they are supported. [6]
4. (a) What is the role of parentheses with relate to precedence of operators. [5]
(b) Explain conditional expression of C language. [5]
(c) Explain the side - effect related to evaluation of expression. [6]
5. (a) Explain the distinct categories of subprograms. [8]
(b) Explain with examples how local variables are passed as function arguments? [8]
6. (a) Discuss cooperation synchronization and competition synchronization in message passing. [8]
(b) Explain binary semaphores. [8]
7. (a) Explain the uses of exception handling in programming languages. [8]
(b) Explain the salient features of prolog. [8]
8. Explain in detail the sequence control in ML. [16]

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1. Explain the fundamental features of object oriented programming languages with examples. [16]
2. Give BNF notation for identifier, for loop, while loop in C. Give the corresponding syntax graph. [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. Assume a programming language is used to extensively manipulate arrays. What are the different array operations which you permit as language designer. Justify your choices. [16]
5. (a) Explain with examples pass-by-value and pass-by-reference parameter passing techniques. [8]
(b) Explain type-checking technique in parameter passing. [8]
6. (a) Explain data abstraction in Ada. [8]
(b) Define a task. What are the different states of tasks? Explain. [8]
7. (a) Discuss the statements in prolog. [8]
(b) Explain how logic programming is helpful in education and natural language processing. [8]
8. Explain various operations that can be performed on atoms and lists in LISP. Give examples. [16]

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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. (a) What is the significance of mathematical logic in the context of axiomatic semantics. Explain with examples. [6]
(b) What is the significance of denotational semantics in describing the meaning of programs. Explain with examples. [10]
3. Define static, stack-dynamic, explicit heap-dynamic, and implicit heap-dynamic variables. What are the advantages and disadvantages of these. [16]
4. (a) What is a C++ reference type and what is its common use. [10]
(b) Why are the reference variables in C++ better than the pointers for formal parameters. [6]
5. (a) Discuss how parameter-passing techniques are implemented. [8]
(b) Explain how multidimensional arrays are passed as parameters. [8]
6. (a) Explain how message passing is implemented in Ada 83. [8]
(b) Discuss about binary semaphores. [8]
7. (a) Discuss about standard functions in prolog. [8]
(b) What are the design issues that are involved in exception handling? [8]
8. (a) Explain the differences between functional and imperative languages. [8]
(b) Explain how Meta Language differs from Haskell. [8]

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1. Compare procedure oriented and object oriented programming. Explain the object oriented features supported by C++. [16]
2. (a) How do you express the operator precedence in parse trees. Explain with example. [8]
(b) How do you express the associativity of operators in grammar. Explain with example. [8]
3. (a) While doing type conversion a narrower type is converted to wider type. What is the advantage of it. What happens if wider type is converted to narrower type. [8]
(b) Type conversion provides more flexibility to the user. Comment on it. [8]
4. Define union. What is the difference between record and union. Explain how union is supported by different programming languages. [16]
5. (a) Discuss the design issues of subprograms. [8]
(b) What are the characteristics of sub programs. [8]
6. (a) Explain how message passing is implemented in Ada 83. [8]
(b) Discuss about binary semaphores. [8]
7. (a) Write the different classes of exceptions in java. [8]
(b) Explain with suitable example finally clause in java. [8]
8. Explain various operations that can be performed on atoms and lists in LISP. Give examples. [16]
