



Department of Computer Science & Engineering

QUESTION BANK

Subject: PPL

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Branch: III CSE I Semester

UNIT – I

- Discuss about various programming domains and their associated languages.
 - Give some reasons why computer scientists and professional software developers should study general concepts of language design and evaluation. [8+8] (Nov'08 set-1)
- What constitutes a programming environment?
 - How can user-defined operator overloading harm the readability of a program?
 - What are the major influences on language design? [4+6+6] (Nov'08 set-2)
- What are the potential benefits of studying programming language concepts?
 - Briefly discuss a few of the areas of computer applications and their associated languages. [8+8](Nov'08set-3)
- Give an example of how aliasing deters reliability.
 - Explain with examples how syntactic design choices affect readability.
 - Describe any one method for bridging the gap between high-level language and machine language . [4+6+6] (Nov'08 set-4)
- What do you mean by a general purpose language. Is C a general purpose language?
 - Explain about von Neumann computer architecture.
 - What are the three general methods of implementing a programming language? [4+4+8](Nov'10 set-1,2)
- Explain language evaluation criteria and the characteristics that affect them. [16](Nov'0 set-3,4)
- Explain the differences between compilation and interpretation ? What are the comparative advantages and disadvantages?
 - How do type declaration statements effect the readability of programming language?(Apr'10 set-2)
- Explain the process of compilation in each phase of a compiler?
 - What is the difference between compiler and processor? (april-2010 set-2)(8+8)
- What are the fundamental features of oopl?
 - What does a Linker do?
 - What are the advantages of using pure interpretation?(6+5+5) (Apr'10 set-4)

UNIT – II

- What do you mean by static semantics? Give examples of static semantic rules that are difficult and impossible to describe with BNF.
 - A concise and understandable description of a programming language is essential to the language's success. Comment on this.
 - Define axiomatic semantics. Comment on its applicability. [5+5+6] (Nov'08 set-1)
- Describe about language recognizers and language generators.
 - What are the syntactic structures or elements that can be described using BNF notation? Give example for each.[6+10] (Nov'08 set-2)
- Give BNF grammar for real numbers and for the same give leftmost derivation of the string 2.89.
 - Define dynamic semantics. Explain briefly different approaches for describing dynamic semantics. [6+10] (Nov'08 set-3)
- What is the difference between a sentence and a sentential form in a CFG?
 - Give an example of left recursive rule in CFG. What is the significance of left recursive rule? [4+4+8]
 - Explain with an example how the weakest precondition for a logical pretest loop is derived. (Nov'08 set-4)
- In what fundamental way do operational semantics and denotational semantics differ?
 - What are the difficulties in using an attribute grammar to describe all of the syntax and static semantics of a contemporary programming language?[5+5+6]

- (c) Explain with an example how operator associativity can be incorporated in grammars. **(Nov'10 set- 1)**
6. (a) Define syntax and semantics.
 (b) The levels of acceptance of any language depend on the language description. Comment on this.
 (c) Define grammars, derivation and a parse tree. [4+6+6] **(Nov'10 set-2)**
7. Define attribute grammars. Give an attribute grammar for simple assignment statements. How is the order of evaluation of attributes determined for the trees of your attribute grammar? [16] **(Nov'10 set-3)**
8. (a) Distinguish between two mathematical models of a language description.
 (b) What do you mean by static semantic rules? Give examples of programming language structures or elements that can be described easily with attribute grammars than with BNF.
 (c) Describe the basic concept of denotational semantics. [5+5+6] **(Nov'10 set-4)**

UNIT - III

1. a) What is an alias? What are the problems associated with it?
 (b) What do you mean by binding? Give examples of some of the bindings and their binding times.
 (c) What are various design choices for string length? [5+5+6] **(Nov'08 set-1)**
2. (a) State whether static binding is more reliable or dynamic binding. Explain why?
 (b) Define explicit heap-dynamic variables. What are the advantages and disadvantages of explicit heap dynamic variables? **(Nov-'08 set-2)**
3. (a) Explain in detail dynamic type binding. [8+8]
 (b) Explain in detail various design issues of character string types. **(Nov'08 set-2)**
4. (a) Write on decimal data types. What are the advantages and disadvantages of decimal data type?
 (b) What is a variable and what are the attributes of a variable? Elaborate on address of a variable.
 (c) What are the design issues for names? Explain in detail. [5+5+6] (Nov-2008 set-2)
5. (a) What are the merits of subrange types?
 (b) Define strong typing. Discuss how type checking is enforced in Fortran 95, Ada, C, C++, and Java.
 (c) Explain associative arrays, their structure and operations. [4+6+6] (Nov-2010 set-1)
6. (a) What is the problem with case sensitive names?
 (b) Write short notes on floating-point data type. What do you mean by precision and range? Also give IEEE Floating-Point Standard 754 format for single-and double-precision representation.
 (c) What is a variable? What are the attributes of a variable? Elaborate on each of them. [4+6+6] **(Nov'10 set-2)**
7. (a) What are the advantages and disadvantages of implicit declaration?
 (b) Evaluate the two approaches for supporting dynamic allocation and deallocation for dynamic length strings.
 (c) Explain in detail arrays, indices, subscript bindings, and array categories.[4+4+8] **(Nov'10 set-3)**
8. (a) What are dangling pointers and lost heap-dynamic variables? How are they created?
 (b) What are the problems posed by managing a heap of single-size cell and variable-size cell? Explain in detail various methods for reclaiming garbage. [6+10] **(Nov'10 set-4)**

UNIT - IV

1. (a) Explain in detail counter-controlled loops. [8+8]
 (b) Discuss precedence and associativity rules of different programming languages.**(Nov'08 set-1) (Nov'10 set-4)**
2. (a) Explain problems with overloading, with suitable example.
 (b) Explain operator precedence and associativity. How can programmers alter the precedence and associativity?
 (c) Write notes on relational and Boolean expressions. [4+6+6] **(Nov'08 set-2)**
3. (a) Consider the following C program:
- ```
int fun(int _ i) {
 *i+=5;
 return 4;
}
void main {
 int x=3;
 x=x+fun (&x)
}
```
- (Nov' 08 set-3)**
- a. What is the value of x after assignment statement in main method assuming i. operands are evaluated left to right  
 ii. operands are evaluated right to left

- (b) What mixed-mode assignments are allowed in C and Java?
- (c) Explain in detail type conversions. [6+5+5] **(Nov'08 set-3)**
4. (a) Explain with an example the “for” statement of the C-based languages.  
 (b) Explain with an example multiple selections using “elseif” in Ada.  
 (c) Explain Dijkstra’s selection construction with an example. [5+5+6] **(Nov'08 set-3)**
5. (a) Explain in detail counter-controlled loops.  
 (b) Discuss precedence and associativity rules of different programming languages. [8+8] **(Nov'10 set-1)**
6. (a) What are the advantages and disadvantages of allowing mixed-mode arithmetic expressions?  
 (b) Assume the following rules of associativity and precedence for expressions:  
 Precedence : Highest \*, /, not +, -, &, mod – (unary) =, /=, <, <=, >=, > and Lowest or, xor  
 Associativity : left to right  
 Show the order of evaluation of the following expressions:  
 i.  $a+b*c+d$   
 ii.  $a*b-1+c$   
 iii.  $a*(b-1)/c \text{ mod } d$   
 iv.  $(a-b)/c \ \& \ (d*e/a-3)$  **(Nov'10 set-2)**  
 (c) Explain in detail multiple selection constructs. [4+4+8]
7. (a) Explain the scope and lifetime of variables use examples to demonstrate when they would coincide and when they don't?  
 (b) What is the difference between the way original C and C89 deal with an actual parameter whose type is not identical to that of the corresponding formal parameter? [8+8] **(Nov'10 set-3)**
8. a) Discuss about scope of variable in for statement of ada?  
 b) What is an assignment statement? What are various assignment statements? [8+8] **(Apr'10 set-4)**

## UNIT – V

1. (a) What are advantages and disadvantages of dynamic local variables?  
 (b) In what ways coroutines different from conventional subprograms?  
 (c) What is parametric polymorphism? [5+6+5] **(Nov'08 set-1)**
2. Compare the various parameter passing mechanisms. [16]
3. (a) Discuss user defined overloaded operators.  
 (b) What are the advantages and disadvantages of keyword parameters?  
 (c) In what ways can aliases occur with pass-by-reference parameters? [6+5+5] **(Nov'08 set-2)**
4. (a) Explain why aliasing makes the effects of implementing parameter passing by reference and by value-result different. Give an example to explain the difference. [8+8] **(Nov'08 set-3)** **(Nov'10 set-1)**  
 (b) What are the characteristics of co-routine feature. List the languages which allow co-routines.
5. (a) Explain how subprogram names are passed as parameters. Illustrate with examples.  
 (b) Explain how subprogram is overloaded? Give examples. [8+8] **(Nov'10 set-2)**
6. (a) Explain Dijkstra’s selection construction and loop structure. (b) Explain with examples user-located loop control mechanisms provided by various languages. [8+8] **(Nov'10 set-3)**
7. (a) Explain with examples pass- by- value and pass- by- reference parameter passing techniques.  
 (b) Explain type checking technique in parameter passing. [8+8] **(Nov'10 set-4)**
8. a) What is a subprogram? Discuss design issues of subprograms?  
 b) How to implement generic functions in c++? [8+8] **(Apr'10 set-2)**

## UNIT - VI

1. Discuss how producer-consumer problem and Dining philosophers problem are solved using concurrency in ADA. [16] **(Nov'08 set-1)**
2. (a) Distinguish between C++ class and ADA package.  
 (b) What problems can occur using ‘C’ to define abstract data types?  
 (c) Describe the purpose of the “with” and use classes. [6+6+4] **(Nov'08 set-2)**
3. How message passing is implemented in Ada? Explain with examples. [16] **(Nov-08 set-3)**
4. (a) Write an analysis of the similarities and differences between java packages and C++ namespaces.  
 (b) Explain how information hiding is provided in an ADA package. [8+8] **(Nov'08 set-4)**
5. Explain the following terms : (a) Message passing (b) Concurrency in Ada

- (c) Monitors [6+5+5] **(Nov'10 set-1) (Nov'10 set-2)**
6. Explain the following terms : (a) Message passing (b) Concurrency in Ada  
(c) Monitors [6+5+5] **(Nov'10 set-4)**
7. (a) Briefly Explain the Sub-program level concurrency.  
(b) Define monitor? Explain how cooperation synchronization and competition synchronization are implemented using monitors. [8+8] **(Nov'10 set-3)**

### UNIT - VII

1. (a) What is the difference between checked and unchecked exception in java?  
(b) How can exceptions explicitly raised in C++?  
(c) How is user defined exception defined in ADA? [4+6+6] (Nov-2008 set-1)
2. Write the following statements in prolog: (a) If Fido is yellow lab, then Fido is a dog  
(b) If it is Tuesday and it is February, then there is school (c) If Fred is a male and Fred is your parent, then Fred is your father (d) If x is your parent then x is your father or x is your mother [4+4+4+4] **(Nov'08 set-2)**
3. Explain the following terms: (a) Clausal form (b) Resolution (c) Fact statements [5+5+6] **(Nov'08 set-3)**
4. What is meant by logic programming? Explain about different types of application in logic programming. [16] (Nov '08set4)
5. (a) Discuss about basic elements of prolog. Give examples.  
(b) Write a prolog description of your family tree (based only on facts), going back to your grand parents and including all descendants. Be sure to include all relationships. [8+8] **(Nov'10 set-1)**
6. (a) Discuss Terms and Goal statements in Prolog.  
(b) Explain prolog interfacing process. [8+8] **(Nov'10 set-2)**
7. (a) What are different exception conditions possible in Ada give their respective meanings? **(Nov'10 set-3)**
8. (a) What does it mean for an exception to be bound to an exception handler?  
(b) Discuss about exception handling in ADA? (Nov-2010 set-4)

### UNIT - VIII

1. (a) Explain some of the important functions of LISP.  
(b) Explain about LISP interpreter. [10+6] **(Nov'08 set-1)**
2. (a) Compare structure programming and functional programming.  
(b) What are the three features of Haskell that makes very different from schema?  
(c) What is type inferencing used in ML? [6+6+4] **(Nov'08 set-2)**
3. (a) What is G -List in LISP. What is returned equation by the following expression (assoc 'a'((b,1,2)(c,3,4)(a,5,1)(d,b,2)))? (Nov-2008 set-3)  
(b) Write LISP program segment that generates factorial (n). [9+7] **(Nov'08 set-3)**
4. (a) Explain main features of imperative languages.  
(b) Write a LISP function fib(n) that computes nth Fibonacci number. [8+8] **(Nov'08 set-4) (Nov'10 set-1)**
5. Explain the Basic primitives of LISP. Give suitable examples. [16] **(Nov'10 set-2)**  
(b) Explain how data abstraction is implemented in ADA. [8+8]
6. (a) Explain some of the important functions of LISP.  
(b) Explain about LISP interpreter. [10+6] **(Nov-2010 set-3)**  
(c) How can an exception be explicitly raised in ADA? [4+8+4]
7. Explain various operations that can be performed on atoms and lists in LISP. Give examples. [16] (Nov'10 set- 4)
8. Write about Haskell?[16] **[Apr'10 set-3)**